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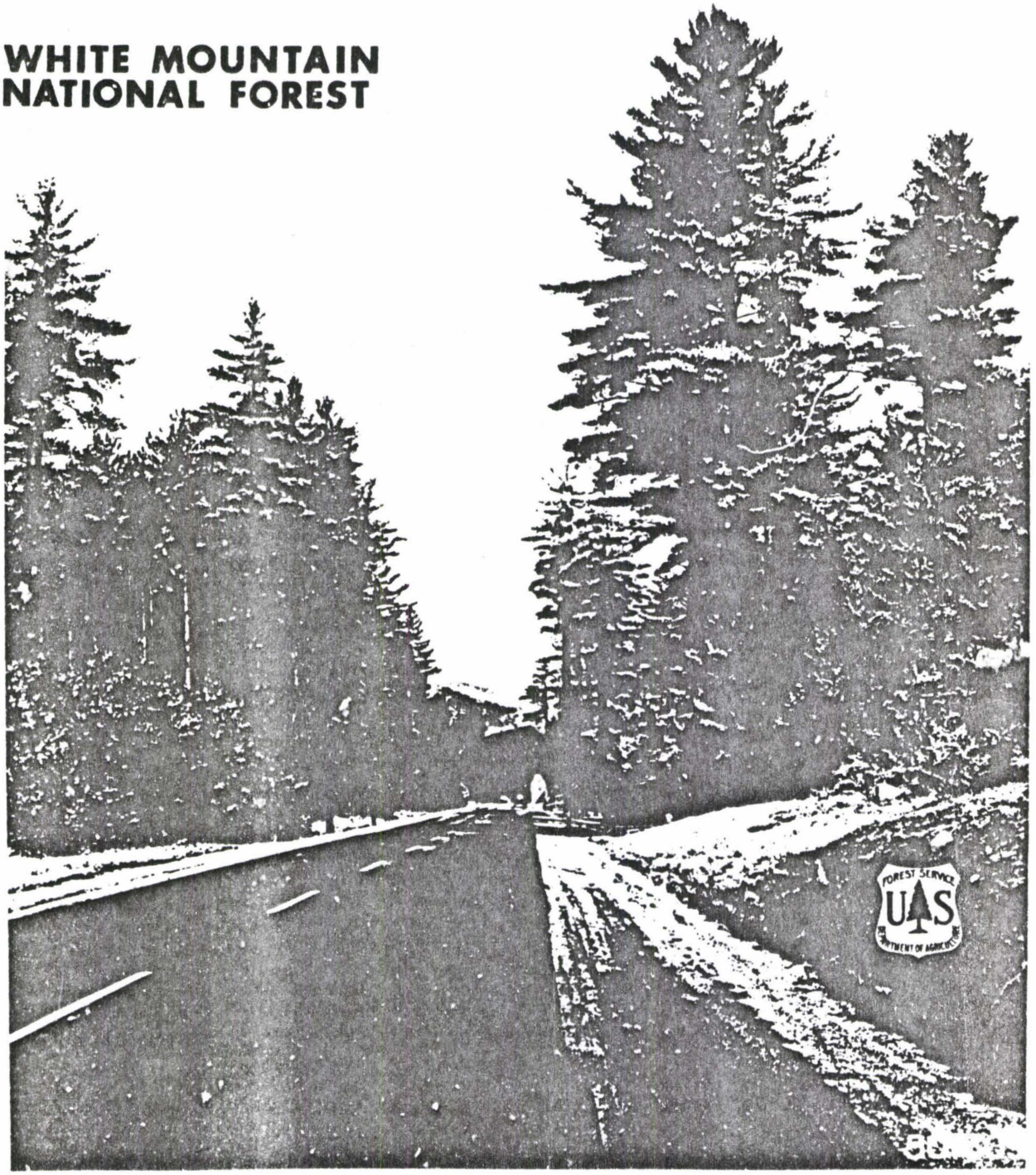
KANCAMAGUS HIGHWAY VIEWSHED PLAN

WHITE MOUNTAIN NATIONAL FOREST



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Title: Kancamagus Highway Viewshed Plan

Abstract: The Kancamagus Highway, located on the White Mountain National Forest, has been proclaimed as one of the most scenic highways in the East. Although the highway is designed to serve multiple use management of the National Forest, it receives its dominant use from forest visitors driving for pleasure and viewing scenery. Other recreation opportunities associated with the highway include camping at developed campgrounds, picnicking, visiting historic sites, interpretation, hiking, swimming, and photography.

Management of the vegetation within the highway viewshed, especially in the foreground zone, is recognized as an important need. This management is necessary to maintain or enhance both the scenic quality and the various recreation opportunities identified above. Although Forest management allows for treatment of vegetation in the corridor, this management has been lacking, primarily to avoid creating any undesirable visual impacts. As a consequence, there is a concern over the loss of the quality and character of the existing vegetative stands as they approach their biological maturity. This paper addresses these needs and develops the necessary direction and prescriptions to manage the vegetation along the segment of the Kancamagus Highway running from Rocky Gorge Recreation Area to Sabbaday Falls Picnic Ground.

ACKNOWLEDGEMENTS

I would like to acknowledge and thank several people who gave considerable time and support in the completion of this project.

Quentin Mack, District Timber Staff for the Saco Ranger District, provided invaluable time in collecting and verifying stand data from which to develop the prescriptions. Besides providing constant interpretation of the data and helping to develop the integrated prescriptions, he actually wrote the technical descriptions in Chapter XII for implementing the Plan. During the course of the project, I probably learned more from Quentin about silvicultural practices than at any other point in my career. Without his help and input, I could not have completed the project. I should also mention Ray Ellis, now in the Regional Office Timber Section, who contributed to data collection during the early phases of the project.

Another major contributor, my wife, Adonna spent a few days and late evenings typing and putting together some of the charts used in the paper. Having her help and support is always kind of special.

Those who suffered the most during the last couple of months (besides my children) as the paper started taking shape were those on the Districts requesting my time in project work and who were either ignored or who had trouble getting anything from me. To them I apologize and appreciate their patience. In general, I would like to acknowledge everyone in the office

who answered questions or who on request provided some bit of needed information.

Another group I need to mention are those who attended the Eastern Region Landscape/Timber Management Workshop at Lake Geneva, Wisconsin in February. Their response and feed-back provided as a result of the presentation Quentin and I gave on the project was not only encouraging to its value in total Forest management, but helped to strengthen and clarify certain aspects of the project.

And finally, I would like to thank the Forest Service who gave me the opportunity to attend the course, the staff at Clemson, and especially Gina McLellan for the quality of the course and making the whole process fun.

TABLE OF CONTENTS

I.	INTRODUCTION	1
II.	PROBLEM STATEMENT	3
III.	DELIMITATIONS	5
IV.	PREMISIS	9
V.	LIMITATIONS	10
VI.	LITERATURE REVIEW	11
VII.	THE PROCESS	14
VIII.	GOALS AND OBJECTIVES	18
IX.	INVENTORY	21
X.	ANALYSIS	28
	VISUAL CHARACTER AND SEQUENCE	28
	SILVICULTURAL PRACTICES	32
	RECREATION	38
XI.	THE PLAN	42
	DESIRED CHARACTER DESCRIPTIONS	42
	VIEWSHED DIRECTION	47
XII.	IMPLEMENTATION AND SCHEDULING	58
	TEN YEAR ACTION PLAN	58
	TREATMENT PRESCRIPTIONS FOR 1985	63
	APPENDIX	
	A. MANAGEMENT AREA DIRECTION-MA 2.1	A-1
	B. WHITE MOUNTAIN NATIONAL FOREST VISUAL QUALITY OBJECTIVE GUIDE FOR EVEN-AGED MANAGEMENT	B-1

C. EVEN-AGED VEGETATIVE MANIPULATION STANDARDS AND GUIDELINES FOR MA 2.1 C-1

D. UNEVEN-AGED VEGETATIVE MANIPULATION STANDARDS AND GUIDELINES FOR MA 2.1 D-1

E. UNIT DATA FORM (SAMPLE) E-1

F. DEFINITIONS F-1

G. BIBLIOGRAPHY G-1

LIST OF FIGURES AND TABLES

FIGURE 1	- PROJECT LOCATION MAP	iv
2	- HIGHWAY CHARACTERISTICS	6
3	- HIGHWAY CHARACTERISTICS	7
4	- HIGHWAY CHARACTERISTICS	8
5	- VIEWSHED PLANNING PROCESS	17
6	- CURRENT CONDITION	25
7	- EXISTING RECREATION SITES	27
8	- DESIRED FUTURE CONDITION	49
9	- TEN YEAR ACTION PLAN	60

TABLE 1	- SPECIES DISTRIBUTION BY HABITAT	23
2	- STANDARDS AND GUIDELINES FOR HABITAT MANAGEMENT UNITS	30
3	- MANAGEMENT SYSTEM OPTIONS BY HABITAT TYPE	35
4	- DIAMETERS FOR MATURE SPECIES	36
5	- DESIRED FUTURE CONDITION-GENERAL PERSCRIPTION SUMMARY	50
6	- TEN YEAR ACTION PLAN - SUMMARY OF UNITS TO BE TREATED BY YEAR	61
7	- TEN YEAR ACTION PLAN - SUMMARY OF TREATMENT PERSCRIPTIONS FOR 1985	62

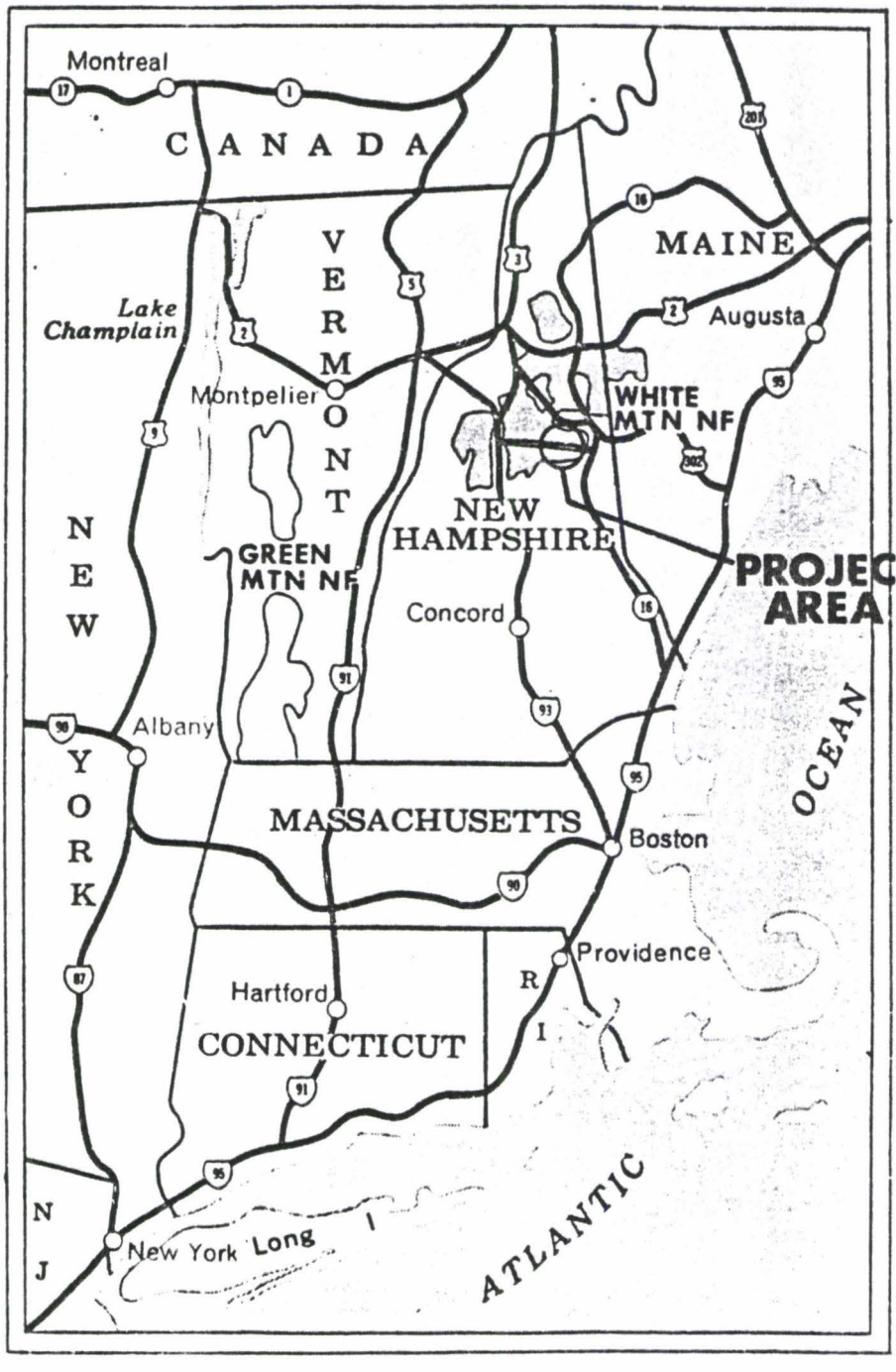


Fig. 1 - PROJECT LOCATION MAP

I. INTRODUCTION

The Kancamagus Highway is one of several scenic highways on the White Mountain National Forest (Figure 1) identified through Forest Planning as having a need for a Viewshed Plan. A plan that would develop specific prescriptions for lands within the seen area of the highway to carry out required integrated management direction.

The Kancamagus Highway, proclaimed as one of the most scenic highways in the East, was opened for through traffic between the villages of Conway and Lincoln, New Hampshire in 1959. However, its history of development can be traced all the way back to the early 1800's as settlers eked out a living in the isolated valley through farming, taking in summer boarders and by logging. Much of its alignment today follows the location of sections of the old logging railroads.

From Conway, this 34 mile forest highway follows the Swift River to Passaconaway Valley. From there it climbs to an elevation of over 2500 feet and drops down to follow the Hancock Branch and East Branch of the Pemigewasset River to Lincoln. The Highway is designed to serve multiple use management of the National Forest and is open year-round, weather conditions permitting. In addition to its scenic values and associated recreation developments, it also provides access for fire protection, timber harvesting, and other uses that may be made of the National Forest. Vehicle use in 1983 totaled over 800,000 vehicles with peak use occuring during the fall color season. In the same year, combined use at the major

developed recreation sites totaled over 170,000 Recreation Visitor Days (RVD's).

The Highway itself is administered by the State of New Hampshire Highway Department, but lands adjacent to the Highway are administered by two Ranger Districts with the boundary occuring at the height of land located at the Kancamagus Pass. The eastern segment administered by the Saco District Ranger, and specifically that five mile segment located between Rocky Gorge Recreation Area and Sabbaday Falls Picnic Ground will serve as the location for the project addressed in this paper.

II. PROBLEM STATEMENT

A viewshed is defined as the total landscape seen or potentially seen from a travel route. It may include foreground, middleground, and background distance zones. Where travel speeds and vegetative screening do not permit the viewer to see beyond a quarter of a mile or so, the viewshed normally takes on a linear, corridor effect. Planning and designing management activities within the viewshed represents the most intensive level of planning in the National Forest Visual Resource Management Program.

Forest management does allow for treatment of vegetation within the viewshed. However, this management has been lacking on most sensitive highways, primarily to avoid creating any undesirable visual impacts. As a consequence, there is a concern over the loss of the quality and character of the existing vegetative stands as they begin to approach their biological maturity and the viewshed becomes a corridor of monotonous vegetation. Management of the vegetation within the highway viewshed, especially in the foreground zone, is recognized as an important and necessary management need to maintain or enhance the scenic quality (long range visual diversity) and the various recreation opportunities associated with the corridor. Also, increased demands to utilize National Forest for commodity production have resulted in increased need to manage these same acres for timber production.

With respect to these areas of concern, this plan will develop and provide

the land manager the necessary prescriptions for management of vegetation along the segment of the Kancamagus Highway running from Rocky Gorge Recreation Area to Sabbaday Falls Picnic Ground. The plan will:

1. Identify silvicultural prescriptions required to maintain or enhance the desired visual character and recreation opportunities associated with the highway.

2. Provide a predictable timber output for the viewshed.

3. Develop and test a process adaptable for completing other viewshed plans on the Forest.

III. DELIMITATIONS

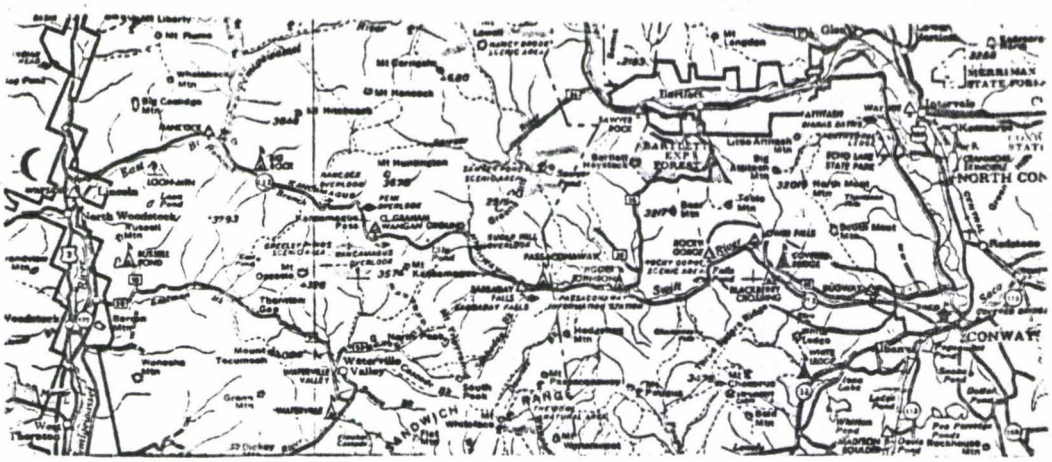
The project area has been limited to a segment of the Kancamagus Highway rather than the entire highway to keep the project within a manageable scope, especially with respect to the time requirements related to the Recreation Short Course field problem.

Early in the evaluation process of determining Forest priorities for viewshed plans, the eastern division of the Kancamagus Highway was singled out as first priority based on recreation use and current state of the Forest vegetation. The western division of the Highway presents entirely different recreation use characteristics with vegetative management needs of a lower priority.

The project area was further defined after identifying three distinct segments within the eastern division, each presenting a unique vegetative management need with respect to achieving visual and recreation management goals. The three segments with individual characteristics outlined are shown in Figures 2 through 4.

The segment from Rocky Gorge Recreation Area to Sabbaday Falls Picnic Ground presented the area where management of the vegetation was the most critical and created the largest challenge for the problem. Eventually, all segments will need to be addressed.

Fig. 2 - HIGHWAY CHARACTERISTICS
FOREST BOUNDARY TO ROCKY GORGE RECREATION AREA



FOREST BOUNDARY TO ROCKY GORGE RECREATION AREA

- VIEWER INTEREST IS ORIENTED TOWARD THE SWIFT RIVER.
- ROCK LEDGE IS A SIGNIFICANT CHARACTERISTIC OF THE FOREGROUND LANDSCAPE.
- OPPORTUNITY TO PARTICIPATE IN ACTIVITIES AT DEVELOPED RECREATION SITES IS MODERATE.
- RECREATION ACTIVITIES ARE ORIENTED TOWARD THE RIVER.
- THE HIGHWAY ALIGNMENT CLOSELY FOLLOWS THE RIVER WITH FREQUENT CURVES. UNDEVELOPED PULL-OFFS ARE A COMMON OCCURENCE.
- THERE IS GOOD CONTRAST BETWEEN HARDWOOD AND SOFTWOOD FOREST TYPES.
- MANAGEMENT OF VEGETATION TO CREATE VARIETY IN THE LANDSCAPE IS NOT CRITICAL.

*VEGETATIVE MANAGEMENT OBJECTIVES SHOULD BE ORIENTED TOWARD ENHANCEMENT OF THE RIVER ENVIRONMENT.

Fig. 3 - HIGHWAY CHARACTERISTICS
ROCKY GORGE RECREATION AREA TO SABBADAY FALLS PICNIC GROUND

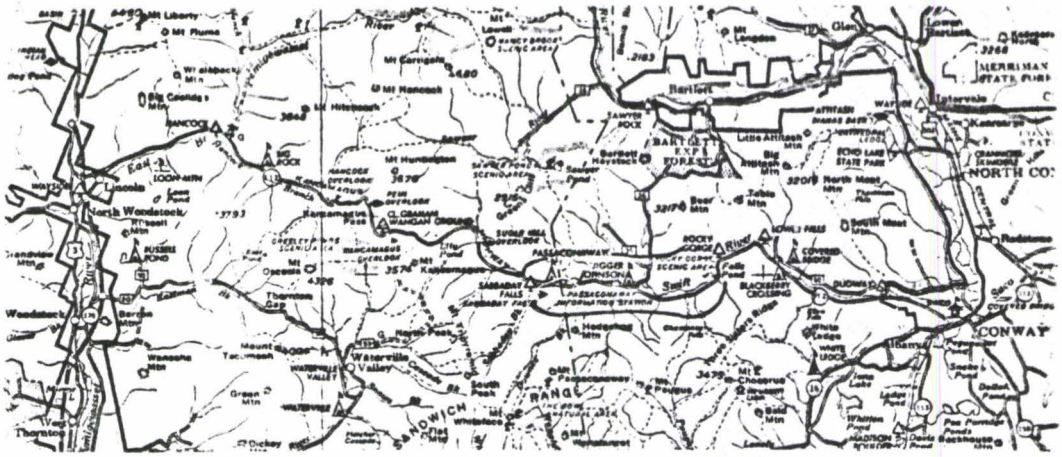
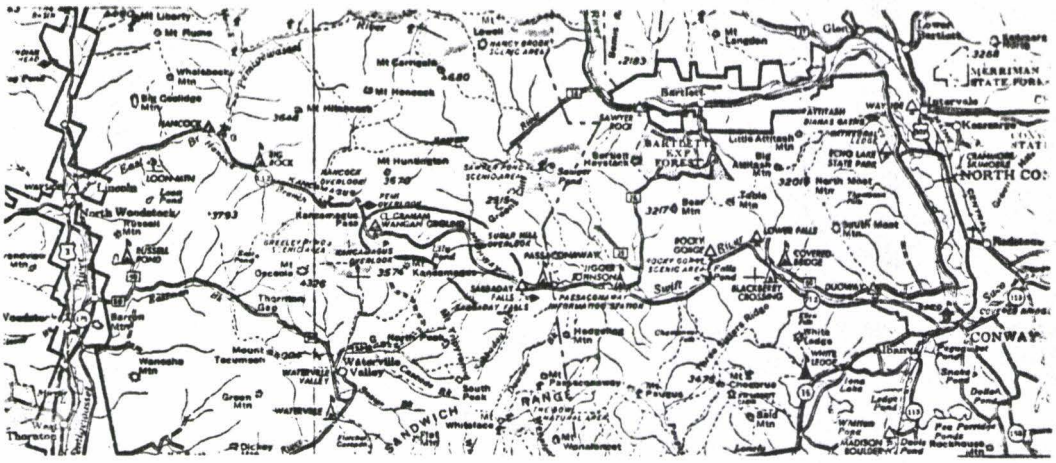

Bartlett
CONWAY
NORTH CO
Waterville Valley
SANDWICH RANGE
Rocky Gorge Scenic Area
Sabbaday Falls
Passaconaway
Swift River
Kancamagus Highway
Loon Mtn
North Woodstock
Lincoln
Woodstock
Thornton
Ossipee
Tamworth
Jackson
Glen
Intervale
Mt Liberty
Mt Flume
Mt Carrigain
Mt Hancock
Mt Hitchcock
Big Coolidge Mtn
Mt Huntington
Mt Kancamagus
Mt Osceola
Mt Whiteface
Mt Tecumseh
Mt Chocorua
Green Mtn
Black Mtn
Bear Mtn
Tabletop Mtn
Big Attitash Mtn
Little Attitash Mtn
Mt Langdon
Mt Washington
Mt Jackson
Mt Pierce
Mt Eisenhower
Mt Monroe
Mt Adams
Mt Madison
Mt Clay
Mt Jefferson
Mt Washington
Mt Pleasant
Mt Franklin

Fig. 4 - HIGHWAY CHARACTERISTICS

SABBADAY FALLS PICNIC GROUND TO THE KANCAMAGUS PASS (DISTRICT BOUNDARY)



SABBADAY FALLS PICNIC GROUND TO THE KANCAMAGUS PASS (DISTRICT BOUNDARY)

- VIEWER INTEREST IS ORIENTED TOWARD MIDDLEGROUND AND BACKGROUND VIEWS.
- LANDFORM IS A SIGNIFICANT CHARACTERISTIC OF THE LANDSCAPE.
- THE HIGHWAY ALIGNMENT INCLUDES STEEP GRADES. UNDEVELOPED PULL-OFFS ARE A COMMON OCCURENCE.
- VEGETATIVE MANAGEMENT CONSTRAINTS ARE IMPOSED ON THE LANDSCAPE DUE TO ELEVATION AND LANDFORM.

*VEGETATIVE MANAGEMENT OBJECTIVES SHOULD BE ORIENTED TOWARD ENHANCEMENT OF MIDDLEGROUND AND BACKGROUND VIEWS.

IV. PREMISIS

The concept of this Viewshed Plan is based on the premise that visual variety and certain recreation management needs can be achieved through silvicultural practices, and that timber management and subsequent harvesting can occur in harmony with the natural appearing landscape.

V. LIMITATIONS

There may be some concern that the paper does not consider any alternatives to the plan proposed in Section XI. In the inventory and analysis stages, several silvicultural prescriptions were considered and evaluated for each unit within the defined viewshed. However, a desired characteristic of the plan is that only the best silvicultural treatment that achieves the desired visual and recreational goals be adopted. It was felt that the methodology or process utilized of constantly working the desired silvicultural treatment together with the desired visual and recreation management prescription allowed for a natural evolution of the single best prescription to meet all goals.

It should also be remembered that the proposed Forest Management Area allocations for the project area went through an analysis and public review process that evaluated, in a broad sense, other management alternatives. In this respect, the paper is merely a refinement and develops prescriptions to carry out the adopted management direction.

VI. LITERATURE REVIEW

Available research and technical literature related to the project paper was summarized into the nine broad groups listed in the Bibliography. Of these groups, those dealing with silviculture and perception and perference of landscapes provided the most useful and supportive data to develop the prescriptions in the plan.

Much of what is stated in the area of perception and preference can be summarized in the following statements made by Bob Brush, Research Landscape Architect, at the Eastern Region Landscape/Timber Management Workshop, February 1984.

1. Visual interest in the flat ground, especially in foreground areas, can be established by creating diversity in stand structure. In doing this, there is a wide range of stand structures people will tolerate.

2. Four characteristics of even-aged management in creating diversity are:
   a. Creates greatest variety in stand structure.
   b. Creates greatest change in stand structure over time.
   c. Regulated forest will assure a large diameter stand somewhere.

d. Patterns of clearings add more to interest than large diameter trees.

3. Three characteristics of uneven-aged management in creating diversity are:

a. Creates very distinctive vertical spaces.

b. Stand structure is very homogenous and is stable over time.

c. Can create small clearings of variable size.

4. It is important to establish diversity in rate of change of stand structure (i.e. create sequential variety).

5. In foreground only landscapes, the sequence is more important than a view at any one place. (Eastern Landscapes)

6. In foreground, visual interest comes from Modification as well as Preservation and Retention Visual Quality Objectives.

7. Natural appearance is still important in modified landscapes, but with wide ranges of tolerance.

A paper drafted by fellow student and Landscape Architect Ross Frid titled "Literature Review of Certain Research Papers Concerned with the Field of Landscape Management and User Preference" was helpful. This paper does an excellent job of summarizing much of the research completed in the area of Landscape Management. It gave special emphasis to the need for maintatining more of the open, uncluttered and natural appearing landscapes.

Of the other literature reviewed, the Forest documents provided the basic direction for the plan. Literature on Design and Technique, while an important consideration in developing prescriptions, will have a greater importance in actual sale design and layout in the field. Review of literature on silviculture was not only necessary to increase my knowledge in this area, but also helped in identifying unique visual and recreation characteristics of the major forest types. Although much of the paper was developed on experience gained working in the field of Landscape Management during the last several years, the literature reviewed offered new insights and support in its development.

VII. THE PROCESS

Although viewshed planning is an important and recognized need, it is fairly young in concept and application. To date few plans have been published which provide a good example of logical steps to be implemented in arriving at the output. Much of the format for this plan was drawn from the "Viewshed Plan for the Santiam Highway--Deschutes National Forest" and the "National Forest Landscape Management--Timber". Two other viewshed plans reviewed were found to be confusing or much too detailed in content.

One of the stated objectives of the plan is to develop and test a process for completing other viewshed plans on the Forest. I felt the process developed should easily adapt to different situations, be simple in format but still provide the necessary steps to achieve the desired results, and that it provide a record of important data and decisions.

Preliminary discussions were held with the District Ranger, Timber Staff, and others in arriving at desired characteristics that the process and resulting plan should incorporate. These preliminary discussions were found to be extremely important not only in achieving an acceptable product but in minimizing conflicts in the process.

As a result of these discussions the following basic requirements were outlined:

1. The plan should provide prescriptions for achieving or maintaining the desired visual character of the viewshed.

2. The desired visual character of the viewshed should be achieved through sound timber management principles and practices, and that they would not be sacrificed to meet visual management objectives. Instead, spacing of treatment entries, limitations on the amount of acres harvested at one time, lengthening of rotation ages, and other techniques would be used to meet the objectives.

3. Timber production was recognized as an important secondary output and timber harvest projection tables should be provided in the plan.

4. Enhancement and rehabilitation opportunities should be identified with the appropriate treatment outlined. Opportunities might include enhancing views of wetlands, enhancing fall vegetative constrast, and providing more frequent middleground views of nearby mountain peaks.

5. The plan should provide both short term and long term direction for management of the viewshed. For long term direction, the Viewshed Plan needs to show a good linkage to project planning, providing a general schedule of treatment (perhaps by decade) to achieve the desired visual character for the viewshed. This link between viewshed planning and project planning must be detailed enough to convey long term objectives, but not so specific that unforeseen changes cannot be accommodated. Identified projects need to be fundable. Priority of treatments also needs to be determined.

6. In identifying the output of the plan, it was felt that the immediate foregoround stands needed to be addressed in specific terms (i.e. a desired character would be determined for each stand and a general perscription outlined to achieve that desired character). For units within the middleground and background zone, Visual Quality Objective guidelines already established for use on the Forest would apply (Appendix B).

7. Completion of the plan should reduce the Landscape Architect's involvement in the future design and laying out of visually acceptable sales within the viewshed.

8. The Viewshed Plan should be developed within the framework of the Forest Plan.

In addition to these items and as a result of the Clemson Recreation Short Course, I identified a greater need to incorporate into the process the management goal to maintain and enhance recreation opportunities through vegetative management.

The six basic steps followed for the Viewshed Plan are identified in Figure 5.

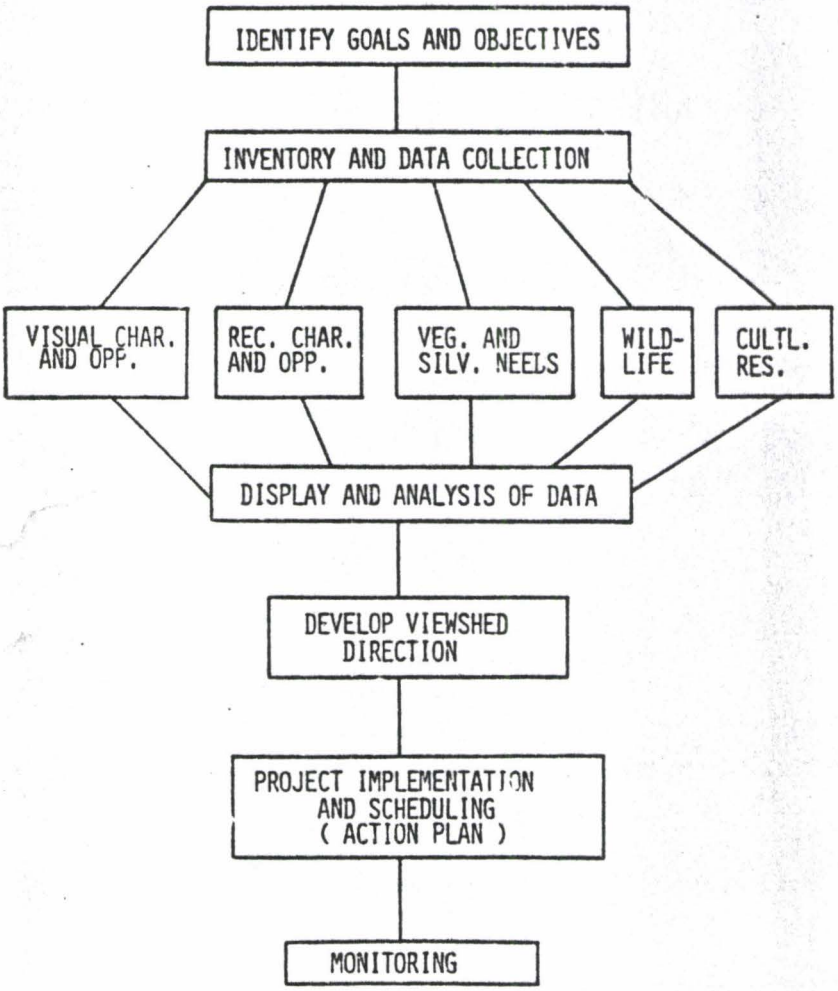


Fig. 5 - VIEWSHED PLANNING PROCESS

VIII. GOALS AND OBJECTIVES

The Draft Forest Plan Management Area allocation for the viewshed is 2.1---Emphasis on Visual Resource Management. (Appendix A). Because of the use and visual sensitivity of the highway, the allocation is expected to remain the same under all alternatives. The goal within this management area is to:

-Protect and enhance visual quality

-Broaden the range of recreation options, mainly those offering roaded natural opportunities

-Provide moderate amounts of high quality hardwood and other timber products on a sustained yield basis

-Provide a balance mix of habitats for all wildlife species

The Draft Forest Plan also identifies the Visual Quality Objectives (VQO's) and Recreation Opportunity Spectrum (ROS) Classification for the Project Area. The Visual Quality Objectives for the foreground zone are Retention and Partial Retention. These objectives are an indication of what is visually expected and acceptable to the general public. Retention provides for management activities which are not visually evident. Timber harvest units, for example, should not be noticeable to the average forest visitor once the harvest activities are completed. Retention does

not imply that the vegetation of landscapes viewed today will be the same in a few decades. Rather, Retention implies the vegetation will remain natural appearing regardless of its growth stage. The vegetative composition of the landscape may gradually change over long periods of time, but changes will be subtle, and not evident to the casual forest visitor. In a similar manner, Partial Retention indicates that the management activities may be more evident, but should still remain visually subordinate to the characteristic landscape.

In meeting these objectives, Forest VQO Standards and Guidelines for Even-aged Management, foreground zone, will apply (Appendix B). Management of the viewshed will also include a mix of even-aged and uneven-aged silvicultural systems following the Even-aged Vegetative Manipulation Standards and Guidelines for Management Area 2.1 (Appendix C) and the Uneven-Aged Vegetative Manipulation Standards and Guidelines for Management Area 2.1 (Appendix D). In addition, management direction for wildlife and water resources will provide some direction and guidelines for the Viewshed Plan.

"Roaded Natural" is the primary ROS objective for the viewshed. Desirable characteristics of this objective are:

Setting Characterization--Area is characterized by predominantly natural appearing environments with moderate evidences of the sights and sounds of people. Such evidences usually harmonize with the natural environment. Interaction between users may be low to moderate, but with evidence of other users prevalent. Resource modification and utilization practices

are evident, but harmonize with the natural environment. Conventional motorized use is provided for in construction standards and design facilities.

Experience Characterization--About equal probability to experience affiliation with other user groups and for isolation from sights and sounds of humans. Opportunity to have a high degree of interaction with the natural evnironment. Challenge and risk opportunities associated with more primitive type of recreation are not very important. Practice and testing of outdoor skills might be important. Opportunities for both motorized and non-motorized forms of recreation are possible.

Evidence of Humans Criteria--Natural setting may have modifications which range from being easily noticed to strongly dominant to observers within the area. However, from sensitive travel routes and use areas these alterations would remain unnoticed or visually subordinate.

Social Setting Criteria--Frequency of contact is moderate to high on roads; low to moderate on trails and away from roads.

Managerial Setting Criteria--On site regimentation and controls are noticeable but harmonize with the natural environment (Controls can be physical such as barriers or regulatory such as permits).

IX. INVENTORY

This phase of the process dealt with identification of special visual characteristics and enhancement opportunities, identification of recreation characteristics and opportunities, and the determination of stand composition and silvicultural needs. Also, special needs or opportunities such as those related to wildlife and cultural resources were noted when appropriate.

The inventory was a combination of reviewing existing information, verification in the field and completing field reviews to obtain needed additional information. The most important and time consuming aspect of the inventory was in the deliniation of stand boundaries and verification of forest types and age class.

Prior to going into the field, stand boundaries were deliniated by reviewing existing compartment and stand maps and through aerial photo interpretation. These boundaries were than verified in the field by the District Timber Staff (Silviculturalists). Besides identifying the principle forest type for each stand, the following information was collected:

1. Vegetative age class
2. Average diameter (DBH) of featured stand
3. Featured stand species composition
4. Average age of featured stand
5. Number of trees per acre

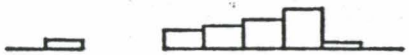
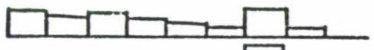
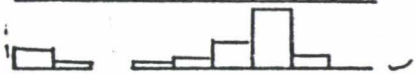
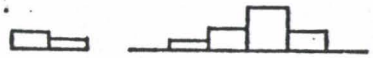
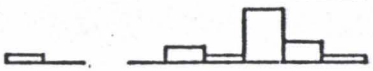
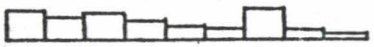
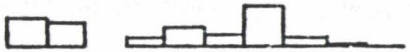
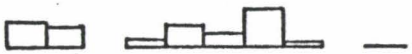
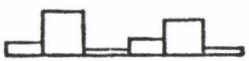
6. Average height of featured stand
7. General description of understory species composition, height, density, etc.)
8. Site productivity
9. Silvicultural treatment priorities
10. Anticipated initial treatment

One aspect of this plan different from other plans reviewed and studied is the mix of vegetative types found in New England as compared to the continuity of the more single species found in the West. Within the project area there were seven (7) different forest types identified and twelve (12) compositional vegetative types when age class was taken into account.

The forest types identified for the Project Area were Northern Hardwoods, Spruce-Fir, Mixed Hardwoods and Spruce, White Pine, Red Pine, Swamp Hardwoods, and Open (Non-Forest). Age classes were identified as Sawtimber, Poletimber and Sappling-Seedling. Although the forest types are identified by classification to be a single species, they are a combination of several species as shown in Table 1, Summary of Habitats. This has significance in indicating both the visual variety of the stand as well as assessing the potential future structure for which the stand can be maraged.

Because of this variety in type and age class as well as the relative small stand size, 4 to 92 acres, the existing individual stands formed the basic units for collecting the required information for the plan. At this

Table 1 - SPECIES DISTRIBUTION BY HABITAT

Habitat	Climax Species	Associated ELT's	Relative Area Occupied	Typical Species Abundance (basal area)	Drainage	Landform
				RED SPRUCE · E. HEMLOCK · WHITE PINE · BALSAM FIR · PAPER BIRCH · YELLOW BIRCH · RED MAPLE · BEECH · SUGAR MAPLE · WHITE ASH		
Sugar Maple/Ash Enriched	Sugar Maple	115G, 315G, 415G	Low		Poor	Slight Depressions and Flats
Sugar Maple/Ash Dry Pan	Sugar Maple, Beech	115G, 315G, 415G	High		Well	Slightly Concave Sideslope
Sugar Maple/Beech Fine Till	Sugar Maple, Beech	115C, 315C, 415C, 105, 305, 405	High		Well	Smooth Sideslope
Red Maple/Beech Washed Fine Till	Beech	105, 305, 405, 115C, 315C, 415C	High		Moderately Well-Well	Smooth Sideslope
Beech Washed Till	Beech	105D, 305D, 405D	Medium		Well - Excessive	Hummocks and Ridges
Softwood Washed Till	Spruce, Hemlock	105D, 305D, 405D	Medium		Well - Excessive	Hummocks and Ridges
Softwood Silty Sediments	Spruce, Fir Hemlock	115A, 315A, 415A	Low		Moderately Well	Flats
Softwood Dry Pan	Spruce, Fir Hemlock	115A, 315A, 415A	Medium		Moderately Well	Sideslopes, Knobs
Softwood Sandy Sediments	Spruce, Fir Hemlock	115A, 315A, 415A	Low		Moderately Well	Flats
Softwood Outwash	Spruce, Fir Hemlock	11, 311, 411	Medium		Well - Excessive	Hummocks, Flats
Softwood Wet Pan	Spruce, Fir Hemlock	115A, 315A, 415A	High		Poor - Very Poor	Depressions
Softwood Ledge	Spruce, Fir Hemlock	2, 2D	Low		Somewhat Excessive	Ridges, Knobs
Hardwood Ledge	Sugar Maple, Beech or Oak	102C, 402C	Low		Somewhat Excessive	Ridges, Knobs

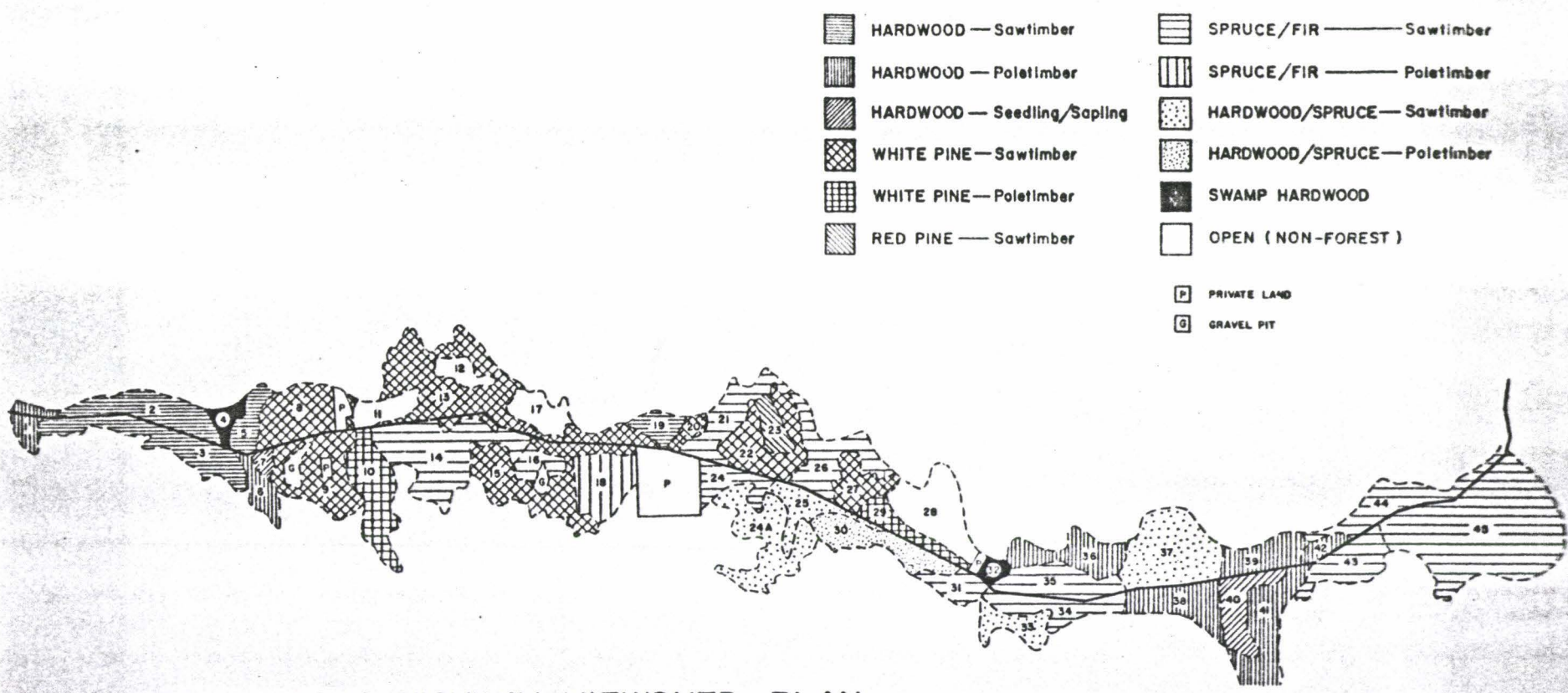
point in the planning process there was no need identified to break the stands into smaller units.

The vegetative types and age classes are shown graphically in Figure 6, Current Condition. Specific silvicultural data is filed by compartment and stand in computerized data files under the TMIS System.

For the purpose of this plan, the general Forest character as well as visual and recreation data were inventoried on individual unit data forms, a sample of which can be found in Appendex E. For simplicity, each unit was given a number 1 to 45. However, the appropriate compartment and stand are identified for that unit, (i.e., Unit 1 is Compartment 99. Stand 4). Therefore, any specific field data not identified on the form for that unit can be obtained from the computer file.

Special visual characteristics and opportunities were also identified and mapped. Generally, the forest type and age-class description provides a good visual description of the stand. However, special situations such as a unique species, open field situation, potential views, opportunity for enhancement of wet lands and fall colors, or areas viewed at the end of long highway tangents were not identified in the stand typing and were identified separately in the field review.

The final area of significant data inventoried was the existing recreation characteristics and potential to enhance recreation opportunities associated with the highway. Included under this category were wildlife



KANCAMAGUS HIGHWAY VIEWSHED PLAN

CURRENT CONDITION

BY VEGETATIVE TYPE AND
SIZE CLASS / EVEN-AGED
MANAGEMENT

Fig. 6 - CURRENT CONDITION

and cultural resources that would enhance recreation opportunities. Existing recreation sites are identified in Figure 7.

Special recreation characteristics and enhancement opportunities identified related to the following activities:

--Camping at developed campgrounds
--Picnicking
--Driving for pleasure
--Viewing scenery and wildlife
--Photography
--Firewood collecting
--Christmas tree collecting
--Interpretation
--Visiting historic sites
--Berry picking
--Unsupervised swimming and waterplay
--Bird watching
--Hiking
--Bicycling on the highway
--Cross-country skiing

DARTMOUTH RANGE
PRESIDENTIAL
CRAWFORD NOTCH
STATE PARK
DRY RIVER
WILDERNESS
Willey House
Mt Bond
Mt Nancy
Mt Lowell
Mt Carrigain
Mt Hancock
Mt Hitchcock
Mt Huntington
Mt Tom
Mt Field
Whitewall Mtn
Mt Willey
Mt Avalon
Mt Jefferson
Mt Washington
Mt Dartmouth
Mt Deception
Mt Mitten
Cutler Mtn
Carroll
Twin Mountain
Fabyans
Bretton Woods
SUGARLOAF
Jackson
Glen
Bartlett
Intervale
Kearsarge
NORTH CONWAY
CONWAY
Albany
Redstone
Eaton Center
Madison
East Madison
Tamworth
Whittier
North Sandwich
South Tamworth
West Ossipee
Chocorua
Silver Lake
Whiteface
Waterville Valley
Thornton Gap
Mount Tecumseh
Mt Osceola
Mt Kancamagus
Kancamagus Pass
Mt Passaconaway
Mt Paugus
Mt Chocorua
Mt Wonalancet
Hedgehog Mtn
Bald Mtn
Sandwich Mtn
Mt Israel
Doublehead Mtn
Mt Square
Mt Whiteface
Mt Flat Mtn
Dickey Mtn
Jennings Peak
Green Mtn
Bald Knob
Mt Westamoo
Mt Langdon
Mt Cabot
Mt Starr King
Mt Waumbek
Mt Jefferson
Mt Adams
Mt Madison
Mt Clay
Mt Washington
Mt Monroe
Mt Eisenhower
Mt Pierce
Mt Franklin
Mt Lafayette
Mt Garfield
Mt Lincoln
Mt Liberty
Mt Flume
Mt Osceola
Mt Huntington
Mt Hancock
Mt Carrigain
Mt Lowell
Mt Nancy
Mt Bond
Mt Willey
Mt Field
Mt Tom

X. ANALYSIS

In the third phase of the process, inventoried physical, biological, and sociological data was combined to determine any adjustments in the unit boundaries and to determine the silvicultural prescriptions for each unit to achieve the desired goals and objectives. In only one case did the analysis indicate a need for a change in unit designation and that was to break two subunits out of unit fourteen because of a unique vegetative type that would probably be managed differently from the remainder of the unit. The analysis of the data will be described by discussing several areas individually.

Visual Character and Sequence

Although the existing visual character is one made up of a mixture and sequence of different vegetative types and age classes, there is a definite lack of variety in spacial qualitites. This is a result of open areas grown in, dense stands in need of thinning, or brush along the highway edge that inhibits penetrating views into the forest. Landscapes can best be described as enclosed or canopy in nature, especially with respect to frequent softwood stands that occur within the project area. Also of special note is the high ratio of softwoods to hardwoods, with softwoods occupying almost twice the acreage of hardwoods. A higher proportion of hardwood would provide a stronger sequential contrast in vegetative types as well as providing the opportunity for areas of the large diameter old growth Sugar Maples.

Species composition objectives and age class distribution guidelines provided for Wildlife Habitat Management Units on the Forest suggest a desirable distribution of 80% hardwoods and 20% softwoods. See Table 2, Standards and Guidelines for Habitat Management Units. This may present a disproportionate percentage of hardwoods to softwoods (the other extreme) but it does present further argument for an increase in hardwood species. This table also suggests a range of age class distribution within the hardwood and softwood forest types that may lend itself to achieving a desirable visual variety. Fall foliage would be another direct benefit of increased hardwood species. However, an increase in hardwoods may be difficult because of the past agricultural treatments and outwash soil characteristics of the project area.

Few true openings were offered in contrast to forested areas. The principle opening that does occur is the result of mowing and brushing to keep an old field open and provide wildlife habitat. Visual benefits are found here, not only in the open to forested area contrast, but in the effects of the informal opening with natural edge contrast and the middleground views provided of the low mountain areas. Up through the 1960's open fields were an intregal part of the existing landscape. Many individuals who can remember these open areas offered encouragement to manage these old fields for the same affect where possible. More open views of this nature would be welcome whether they be permanent or temporary openings. Some opportunities were identified in units 11, 17, and 28.

Table 2 - STANDARDS AND GUIDELINES FOR HABITAT MANAGEMENT UNITS

Wildlife

Species composition objectives and age class distribution will be provided for each Habitat Management Unit (HMU) capable of attaining them. This will represent a desirable age class distribution to be attained within one or more rotations.

Standards and Guidelines

Hardwoods - Each HMU will have a maximum of 80% in hardwood (northern hardwoods - 45%, paper birch - 10%, aspen - 15%, miscellaneous hardwoods- i.e., red maple, oak, oak pine - 10%). Vegetative management will strive to distribute age classes for the major timber types as follows:

Northern Hardwood	Age	% by HMU
	Saplings	10
	Poles	35
	Sawtimber	45
	Overmature	10

Paper Birch	Age	% by HMU
	Saplings	10
	Poles	45
	Sawtimber	35
	Overmature	10

Aspen	Age	% by HMU
	Saplings	15
	Poles	45
	Sawtimber	30
	Overmature	10

Softwoods - Each HMU will be balanced to contain a 20% softwood component. The age class composition in softwoods will be as follows:

1. Regeneration 10%
2. Young (pole size) 25%
3. Mature 55%
4. Overmature 10%

This age class composition, distributed uniformly throughout softwood types will provide habitat for softwood indicator species and adequate winter deer cover.

All cavity trees found within 300 feet of slow flowing streams associated with beaver flowages will be retained (See Riparian types 30 and 35, Appendix E).

Within the softwoods, desirable effects might include creating more open and park like effects with emphasis on the larger diameter trees. The White Pine type offers the potential for a unique character in the form of old growth, open and wide spreading trees. This should be included as part of the desired character to be developed in this type.

Little potential for variety is offered in the form of contrasting water, rock, or land form characteristics, again emphasizing the need for creating variety through vegetative management.

In summary, analysis of visual character and sequence identified the following needs:

--Favor hardwood over softwood species where possible.

--Provide areas of large diameter old growth Sugar Maples.

--Favor White Pine and Spruce over other softwoods.

--Provide an increase in both temporary and permanent openings.

--Enhance middleground views where possible.

--Recognize and manage for unique or interesting species, especially those that add color and texture diversity to the viewshed.

Silvicultural Practices

The existing character of this segment of the Kancamagus Highway has developed through even-aged management practices. The opportunity does exist to develop silvicultural prescriptions based on a combination of even-aged and uneven-aged silvicultural treatments as suggested under the management direction for Management Area 2.1 (Draft Forest Plan). Utilizing both management practices provides greater opportunity for creating different visual characters as well as providing a wide range of treatment methods to apply in any specific or sensitive situation.

Even-aged Management. The even-aged management system produces stands composed of trees having a relatively small difference in age with a tendency to look rather continuous throughout. The regeneration processes in even-aged management tend to produce the strongest and longest duration visual impact of any timber management activity. However, direct benefits can be arrived at in utilizing even-aged management. Enhancing a specific and desirable species such as Paper Birch that would not respond well to uneven-aged management treatments is one example. Another benefit is the opportunity to create a contrast of open to forested area in what might otherwise be a monotonous corridor of vegetation. Although these types of openings are generally temporary in nature, provision can be made within a unit to provide a minimum amount of opening at any one time. Besides this contrast, opportunity also exist to provide views of the more distant landscapes. Creation of openings can also provide certain recreation opportunities such as raspberry picking, a species that usually invades a

clearing or outwash habitat types for a few years immediately following a clear cut. Potential for viewing larger species of wildlife is another benefit of clear cut treatments.

Uneven-aged Management. When applied to appropriate species, uneven-aged management treatments produce forests that contain trees of many sizes and ages intermixed in the same stand. The forest canopy remains relatively continuous and unbroken. As a result, uneven-aged management practices will provide the largest benefit in those situations where the impact of timber harvesting needs to be minimized to meet visual and recreation management objectives.

As a general rule, the more adaptable a forest type is to uneven-aged management, the easier it is to meet the more difficult Visual Quality Objectives. This system of timber management is capable of achieving the Retention Visual Quality Objective in all distance zones if properly applied. However, depending on the forest type being managed, it will not always be convenient to utilize the uneven-aged management system. Although most of the forest types identified within the project area will respond to uneven-aged management practices, this system will not always produce the most desirable results. How well a forest type adapts to uneven-aged management depends upon the species desired, its tolerance to shade, its place in the community's successional development toward the climax, and on the environmental or micro-climatic conditions of the site. If the desired character of the viewshed includes enhancing Paper Birch, it will be extremely difficult to do this under uneven-aged management. Also, there are situations where specific site conditions in the

Spruce-Fir type do not favor uneven-aged management due to wet soil and shallow root systems. These conditions will most likely lead to blow down if stands are thinned out under uneven-aged treatments. Lastly, manageing forest types under uneven-aged management does not afford the opportunity to create temporary openings at least to any large scale.

Although each management system has positive benefits to visual and recreation management, used by themselves they may have a tendency to minimize creating the element of variety in the landscape. This can be seen under the current vegetative condition of the highway. Used in combination, these systems multiply the management options available within each forest type and thus provide the opportunity for a wider range of visual variety and enhancement, as well as meeting most recreation management needs.

Table 3 provides a summary of the response most likely achieved for each major habitat on the Forest for the different treatment options available under the two management systems. Neither management system will always provide the options necessary to meet every management situation. Other alternatives such as no timber management at all, or modified even-aged treatments should be considered where situations warrant. For those units where large diameter mature stands are of importance, Table 4 provides target diameters by species and site index.

Other considerations to take into account in developing silvicultural prescriptions include the rotation ages to which the various types can be

Table 3 - MANAGEMENT SYSTEMS OPTIONS BY HABITAT TYPE

HABITAT TYPE	CLIMAX	SOFTWOOD TENDENCY	CLEARCUT	SHELTERWOOD (LIGHT)	GROUP/PATCH	INDIVIDUAL TREE SELECTION	MOST PRODUCTIVE SPECIES (BD FT)
Sugar Maple/Ash Enriched	Sugar Maple	None	SM/Ash/YB	SM/Ash	SM/Ash/YB	SM	Ash
Sugar Maple/Ash Dry Pan	Sugar Maple/Beech	None	YB/SM/B/Ash	SM/B/Ash	YB/SM/B/Ash	SM/B	SM/YB/Ash
Sugar Maple/Beech Fine Till	Sugar Maple/Beech	None	YB/SM/B	SM/B	YB/SM/B	SM/B	SM/Yb
Red Maple/Beech Washed Fine Till	Beech	Low	B/RM/Y&PB	RM/B	B/RM/Y&PB	B/RM	Red Maple Paper Birch
Beech Washed Till	Beech	Low	PB/B	B	PB/B	B	Beech/PB
Softwood Washed Tills	Spruce Hemlock	Medium	PB/RM	SW/RM	PB/RM	SW/RM	Red Spruce Hemlock
Softwood Silty Sediments	Spruce, Fir	Medium	RM/YB	SW/RM	RM/YB	SW/RM	Red Spruce
Softwood Dry Pan	Spruce, ir, Hemlock	Medium	RM/PB	SW/RM	RM/PB	SW/RM	Red Spruce
Softwood Sandy Sediment	Spruce, Fir, Hemlock	Medium	RM/PB	SW/RM	RM/B/PB	SW/RM	Red Spruce
Softwood Outwash	Spruce, Fir, Hemlock	High	RM/SW/PB	SW/WP	RM/SW/PB	SW	White Pire
Softwood Wet Pan	Spruce, Fir, Hemlock	High	RM/SW/Y&PB	SW	RM/SW/Y&PB	SW	Red Spruce/ Hemlock
Softwood Ledge	Spruce, Fir, Hemlock	High	PB/RM	SW	PB/RM	SW	Red Spruce/ Hemlock
Hardwood Ledge	Sugar Maple, Beech	Low	YB/SM	SM	YB/SM	SM/B	Sugar Maple

SM = SUGAR MAPLE
YB = YELLOW BIRCH
B = BEECH
RM = RED MAPLE
PB = PAPER BIRCH
SW = SOFTWOOD

Table 4 - DIAMETERS FOR MATURE SPECIES

MATURE TREE. Trees may be considered mature when they meet the diameter classes listed below, will survive until the next cuttir period, and meet standards for acceptable growing stock trees.

"MATURE" DBH BY SPECIES AND SITE

Species	Site Index		
	70+	60-69	50-59
Sugar Maple	26	20	--
Red Maple, White Ash	24	18	--
Paper Birch	14	10	--
Hemlock	26	20	16
White Pine	26	22	16
Red Pine	22	20	16
Red Spruce	22	16	10
Balsam Fir	--	12	8
Beech	20	16	--
Yellow Birch	24	18	--

managed, especially under even-aged management. Generally accepted rotation ages for different types are:

Paper Birch----------70 years

Spruce/Fir----------90 years

Northern Hardwoods----------120 years

Mixed Spruce and Hardwoods------110 years

White Pine----------100 years

These rotations can usually be extended by 20 years if necessary. Northern Hardwoods and White Pine can be extended up to 50 years.

Also, availability of equipment or getting an operator with the desired equipment to work on some of the small sales may be difficult. In some situations creative methods to implement projects in the Viewshed Plan will need to be addressed. To achieve results in implementing the project, there may be a need to incorporate several treatments along the highway into one single sale or project in order to interest potential contractors or even to get one who has the preferred equipment to do the work.

In some instance, projects may be incorporated with formal sale programs involving commercial timber sales in areas outside the viewshed. In other instances, results may be achieved through firewood sales providing a direct benefit to the public as well as providing a recreation activity.

Recreation

Current recreation activities and opportunities meet the desireable ROS characteristics. However, there is a need and potential to manage vegetation more intensely to maintain the opportunity to participate in current as well as provide for addtional activities within the ROS setting.

Developed recreation facilities located within the project area include Sabbaday Falls Picnic Ground, Passaconaway Campground, George House (Historic Site), Rail and River Interpretative Trail, and Jigger Johnson Campground. Activities associated with the Developed Recreation Areas are quite obvious. Not so obvious are the various activities inventoried that occur outside the developed facilities and which are an intregal part of the recreation experience associated with the highway and its environment.

Most of these activities can be maintained or enhanced through vegetative management treatments, whether it be just for maintaining a vigorous stand of vegetation to provide for the safety of the user, or whether a specific management practice might directly provide for activity such as berry picking--an opportunity that would be created as a result of clearcut treatment. Treatment through fuelwood sales and reserving certain areas for Christmas tree permits may be unique ways of providing opportunities for different recreation experiences to the public.

Maintaining variety in vegetation creates seasonal contrast and enhances the number one activity of driving for pleasure and viewing scenery. This variety helps maintain the outstanding fall scenery that New England is noted for. It also provides an economic benefit as bus tours and tourist come to the area during the Fall color season. Maintaining variety under the guidelines of Wildlife Management increases the opportunity to view wildlife, especially some of the larger more noticeable species such as moose, deer, snowshoe hare, and certain species of hawks. All these items together provide opportunitites for bird watching and photography.

Eight different trails originate from this segment of the Kancamagus Highway, all receiving high use. Some originate from the developed recreation sites, or from designated parking lots such as Champney Falls. However, some originate directly from the highway without designated off-road parking. Current plans include design of one or two parking lots to provide needed parking. Construction of these parking lots would enhance the quality of certain recreation activities by providing safe parking and reducing the hazard of cars along the highway. This would also enhance the roadside environment as distracting elements are removed and screened from view.

A unique occurance all along the Kancamagus involves the river environment. Lower Falls and Rocky Gorge have historically been heavily used as people congregate at these locations to sun-bathe on the rocks, sit in the pools of water, or tube their way through the rapids. However, this use is now spreading out along the Swift River anywhere access can easily be gained from the highway. Although the river is not evident from

the highway, it does effect use patterns along the highway. People like to stop and park, go through the woods, and find their own spot in the river. This is especially true where visibility through the woods is not threatening in distance or in keeping track of familiar sights such as their car. This indicates vegetative management (thinning treatments) could enhance this experience.

A concern expressed by Recreation Managers on the District revolves around the creation of new openings. Several years ago much indiscriminate camping was occuring along the Kancamagus Highway. This generated concern over the impacts related to visual resources or the opportunity for people to appreciate the scenic quality for which the highway was noted. As a result, a corridor 1/4 mile either side of the highway was designated as a Restricted Use Area (RUA) and camping is prohibited in that zone other than at developed campground. The concern now expressed is whether introduction of openings might further entice people to camp along the highway as these type of settings are attractive to forest users. The argument is that if you do not have the openings or cannot see them, people will not use them, thus minimizing law enforcement needs. I offer the view that contrasting openings to forested areas provides a badly needed visual element as well as a recreation opportunity in the form of wildlife viewing. Providing middle-ground views and allowing people access to areas that they might otherwise be afraid to go into are additional benefits. Increased law enforcement, if really needed, should be treated as a cost to this benefit.

Also along the line of law enforcement is the probability of causing accidents in areas where you might increase the potential to view wildlife. Where the increased potential exist, especially with respect to large animals such as moose, consideration might be given to lowering speed limits. Speed limit regulation is a State responsibility and would need to be coordinated with the appropriate State Agency.

Of special concern is management of vegetation within the Developed Recreation Sites associated with the Viewshed Plan. Specifically these are Sabbaday Falls Picnic Ground, Passaconaway Campground, and Jigger Johnson Campground. Vegetation in a recreation site provides the visitor with many benefits which help make the recreation visit more enjoyable. Benefits include a relaxing atmosphere, comfort, and beautiful surroundings. Vegetation can create spaces within the recreation sites, provide shade, control wind, provide screening, and in general, add to the character of the area. Although these units will effect the visual experience of the highway, their most important benefit is to the recreationist within the developed site. A more detailed plan should be provided for these areas. Also the need to favor longer lived and durable species should be a major consideration as well as favoring treatment through uneven-aged management where possible.

XI. THE PLAN

Desired Character Descriptions

Based on vegetative and silvicultural characteristics, the following Desired Character Descriptions were developed for the plan:

Northern Hardwoods--Even Aged Create large diameter (24 inches) overstory stand. Predominantly one diameter class containing mixture of tolerant and intolerant species with little understory. Treatment used to maintain a healthy vigorous stand of hardwood when site characteristics and condition of stand would make it difficult to manage under uneven-aged management. Units managed under this treatment may continue for another three or four decades at which time consideration might be made to convert to uneven-aged by extending rotation age. Especially important where continuation of even-aged management would not achieve visual quality objectives.

Northern Hardwoods--Uneven-aged Group This treatment would provide a mosaic of single age classes within a small area and is capable of

meeting Retention for vehicle oriented observation. Partial Retention for stationary observation. Treatment would also allow for creating 1/4 to 2 acre temporary openings in contrast to forested areas. Provides benefit for wildlife and favors shade intolerant species.

Northern Hardwoods--Uneven-aged Single Tree Creates an unbroken forest with a high percentage of larger trees in mixture with other smaller size trees (mix of diameter class in stand). Treatment will tend to perpetuate forest dominated by shade tolerant species with emphasis on Sugar Maple. Treatment can be used to discriminate against unwanted species. Will meet VQO of Retention under most circumstances.

White Pine--Even-aged Three Step Shelterwood. Treatment maintains this type under one of few silvicultural obtions available for White Pine management. Old growth Pine provides unique character in branching habit. Can provide some canopy effect within highway corridor. Desirable tree for recreation areas providing openness and good spacial effects underneath. Modified application will be utilized in recreation areas by

maintaining 1/4 to 2 acre treatment areas. Is capable of meeting VQO of Retention.

White Pine--Uneven-aged Group Treatment used in units where White Pine is found along with other species including Black Cherry and Spruce-Fir. In these situations, each species generally grows in its own little group providing the design for the group cuts. Treatment will lead to groups of different species within small area, but will be predominantly White Pine. Allows for creation of small temporary openings. High probability of maintaining Black Cherry and Tamarack species. Treatment will meet Retention for vehicle oriented observation, Partial Retention for stationary observation.

Spruce-Fir--Even-aged Clearcut Create 18 inch diameter Spruce over entire unit with little understory. Thinning from below will create park-like effect somewhat reducing strong corridor effect off Spruce-Fir type and allow good penetration into woods.

Spruce-Fir--Uneven-aged Group Provides for 18 inch Spruce but in small groups in contrast to other groups of age classes within same area. Variety in height and age but more dense.

Provides opportunity to create small temporary openings, also helping to break up strong corridor effect of Spruce-Fir type.

Spruce-Fir--Uneven-aged Single Tree Produces all size classes including 18 inch. Will lead to stronger corridor effect producing continuous mass of vegetation with little penetration into woods.

Mixed Uneven-aged Group Incorporates qualities of both hardwood and softwood under uneven-aged group treatment. Provides immediate foilage contrast especially during fall color season. Will be decreasing hardwood component over time.

Open Provides a combination of open and forested acres within the same unit. Openings will be permanent if maintainance schedule is followed. In contrast to the temporary openings produced under group treatment, grass cover is established along with more natural appearing edge effects.

Unique Provides element of special interest. Includes species such as swamp hardwoods (wetlands). Management options may not be available for sound management of the unit. Effects may also be difficult to reproduce.

The descriptions establish a visual condition to be achieved for a specific forest type when a specific silvicultural treatment is utilized. They form the basic tool for achieving the desired future condition of the viewshed. When applied to the appropriate unit the Desired Character Description will provide the broad direction necessary to achieve the visual, recreation, and silvicultural goals and objectives outlined in Chapter VIII.

Viewshed Direction

Figure 8 graphically displays the Desired Future Conditon developed for the viewshed. It provides the direction for achieving the goals and objectives by managing for a range of vegetative types in a sequential arrangement utilizing treatments under both even-aged and uneven-aged management systems.

Table 5 provides a summary of treatments as well as the priority of treatments for each unit. Criteria for determining priorities was based on:

1. Silvicultural need with salvage requirements receiving high priority.
2. Contribution to visual and/or recreation enhancement needs.
3. Contribution to visual and/or recreation diversity of the project area.
4. Adminstrative considerations.

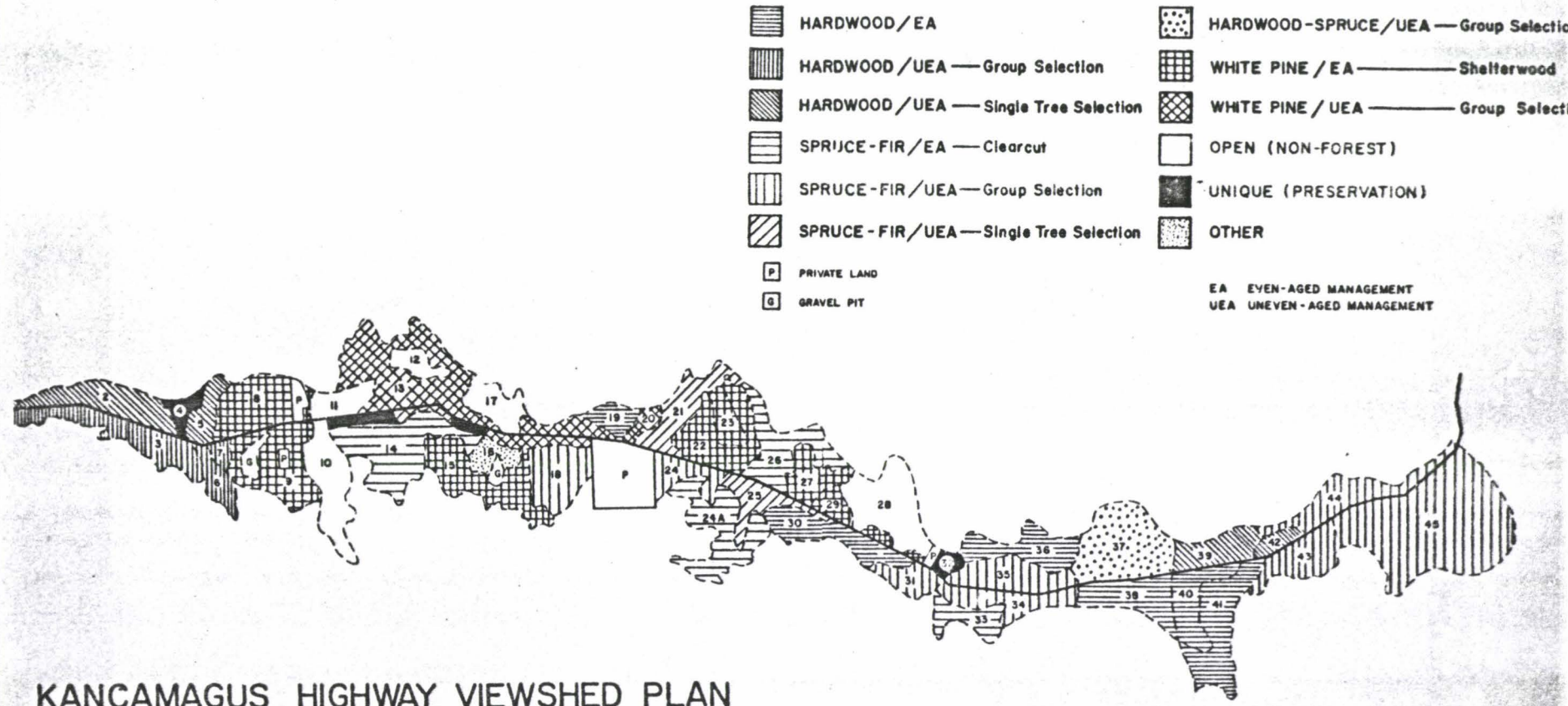
In identifying visual, recreation, and silvicultural priorities, conflicts were few. Usually, those units which were either lacking visual diversity or the desired visual character were also the stands which required high priority silvicultural treatment. In only a few cases were trade-offs required when silvicultural priorities did not fit the planned visual sequence.

As a timber scheduling and planning tool, this plan will allow the land manager to systematically predict harvest volumes, timber stand improvement needs, and presale work requirements. Harvest units can either be incorporated into other timber sales adjacent to the viewshed or considered as separate sales.

Under the established direction the viewshed should always maintain a natural appearance with most management activities creating short-duration impacts only. By scheduling them during seasons when fewer recreationists are traveling the Kancamagus Highway, their effects on the visual or recreation experience will be minimal.

Interpretation Opportunities

During all phases of implementation, opportunities exist to interpret on the ground the concepts outlines in this paper. Every advantage should be taken to provide this interpretation to the public. Opportunities may include use of brochures, displays at the information centers, pull-outs to observe activities completed or still underway, and guided talks.


HARDWOOD / EA
HARDWOOD / UEA — Group Selection
HARDWOOD / UEA — Single Tree Selection
SPRUCE-FIR / EA — Clearcut
SPRUCE-FIR / UEA — Group Selection
SPRUCE-FIR / UEA — Single Tree Selection
P PRIVATE LAND
G GRAVEL PIT
HARDWOOD-SPRUCE / UEA — Group Selectio
WHITE PINE / EA ——— Shelterwood
WHITE PINE / UEA ——— Group Selecti
OPEN (NON-FOREST)
UNIQUE (PRESERVATION)
OTHER
EA EVEN-AGED MANAGEMENT
UEA UNEVEN-AGED MANAGEMENT

KANCAMAGUS HIGHWAY VIEWSHED PLAN

DESIRED FUTURE CONDITION

BY VEGETATIVE TYPE AND
MIX OF EVEN-AGED AND
UNEVEN-AGED MANAGEMENT

Fig. 8 - DESIRED FUTURE CONDITION

Table 5 - GENERAL PRESCRIPTION SUMMARY

UNIT	ACREAGE	TREATMENT SYSTEM	LIMITATIONS	TYPE SALE	PRIORITY	ENTRY SCHEDULE	NOTES
1.	8	UEA/ST	Animal	Fuelwood	2	1/10 yr.	
2.	24	UEA/ST		Multi.Prod.	2	1/10 yr.	
3.	28	UEA/G	Animal/Sm. Tractor	Thin/ Fuelwood	2	1/20 yr.	Enter All Period
4.	5				UNIQUE		
5.	10	UEA/ST	Winter	Fuelwood	1	1/10 yr.	
6.	9	UEA/G	Winter	Thin/ Fuelwood	3	1/15 yr.	
7.	3	UEA/G			1	1/15 yr.	Pre.Comm./ Thin
8.	24	EA/SW	Animal/Non. Rec.Season	Softwood	1	See Spec. Plan	Begin 1985
9.	33	EA/SW	Winter	Softwood	2	1/15 yr.	
10.	26	SPECIAL		Softwood	1	Mow Every 3 years	

Table 5 - GENERAL PRESCRIPTION SUMMARY (Con't.)

UNIT	ACREAGE	TREATMENT SYSTEM	LIMITATIONS	TYPE SALE	PRIORITY	ENTRY SCHEDULE	NOTES
11.	9	OPEN				Mow Every 3 Years	
12.	7	OPEN				Mow Every 3 Years	
13.	68	UEA/G		Fuelwood	1	1/15 yr.	Enter All Period
14.	42	EA/CC	Winter	Multi.Prod.	2	1/10 yr.	15 Acres w/ Passaconaway
15.	29	EA/SW	Winter	Multi.Prod.	2	1/5'20 yr.	Include w/ Passaconaway
16.	8	SPECIAL	Winter	Multi.Prod.	2	Single	
17.	12	(SPECIAL FORESTED OPENING MAINT[illegible]N W/FIRE AND BEAVER)					
18.	21	UEA/G	Winter	Mulit.Prod.	2	1/10 yr.	Include w/ Passaconaway
19.	8	EA	Dry or Frozen	Salv./Thin Fuelwood	1	1/20 yr.	
20.	4	UEA/G	Winter/ Tractor	Softwood	2	1/15 yr.	

Table 5 - GENERAL PRESCRIPTION SUMMARY (Con't.)

UNIT	ACREAGE	TREATMENT SYSTEM	LIMITATIONS	TYPE SALE	PRIORITY	ENTRY SCHEDULE	NOTES
21.	19	UEA/ST	Winter/ Tractor	Multi.Prod	1	1/5 yr.	
22.	25	EA/SW	Animal/Non. Rec. Season	Softwood	1	See Spec. Plan	
23.	8	EA/SW	Animal/Non. Rec. Season	Softwood	1	See Spec. Plan	
24.	12	UEA/G	Winter	Multi.Prod.	2	1/15 yr.	
24a.	32	EA/OR	Winter	Multi.Prod.	2	1/15 yr.	
25.	15	UEA/ST	Winter	Multi.Prod.	2	1/15 yr.	
26.	25	EA/CC	Winter	Thin/Multi.Prod.	1	1/10 yr.	
27.	13	EA/SW		Softwood	3	1/15 yr.	
28.	29	OPEN				Mow Every 3 Years	
29.	12	EA/SW			3	1/15 yr.	
30.	21	EA	Winter	Thin/ Pulpwood Mixed	2	1/10 yr.	

Table 5 - GENERAL PRESCRIPTION SUMMARY (Con't.)

UNIT	ACREAGE	TREATMENT SYSTEM	LIMITATIONS	TYPE SALE	PRIORITY	ENTRY SCHEDULE	NOTES
31.	10	UEA/C	Winter	Pulpwood	1	1/10 yr.	
32.	4				UNIQUE		
33.	12	EA/CC			1	1/10 yr.	Pre.Comm./ Thin
34.	17	UEA/G	Winter	Softwood	2	1/10 yr.	
35.	20	UEA/G		Pulpwood	2	1/10 yr.	
36.	20	EA	Winter or Dry	Thin/ Multi.Prod.	3	1/15 yr.	
37.	38	UEA/G		Multi.Prod.	2	1/10 yr.	
38.	2)	EA	Non Rec. Sea./ Tractor	Thin/Fuelwood	2	1/10 yr.	
39.	16	UEA/ST	Non Rec. Sea./ Tractor	Hardwood	2	1/10 yr.	
40.	17	EA			2	1/10 yr.	Pre.Comm./ Thin.

Table 5 - GENERAL PRESCRIPTION SUMMARY (Con't.)

UNIT	ACREAGE	TREATMENT SYSTEM	LIMITATIONS	TYPE SALE	PRIORITY	ENTRY SCHEDULE	NOTES
41.	31	EA	Non. Rec. Sea./ Tractor	Thin/Fuelwood	2	1/10 yr.	
42.	5	UEA/ST		Fuelwood	2	1/10 yr.	
43.	19	UEA/G	Winter	Pulpwood/Mixed	2	1/10 yr.	
44.	23	UEA/G	Winter/ Tractor	Multi.Prod.	1	1/10 yr.	
45.	92	UEA/G	Winter	Pulpwood	2	1/15 yr.	Roadside Only

Specifically, the direction provided for in this plan will:

	UNIT
1. Meet Draft Forest Plan Management Direction for Management Area 2.1.	All
2. Incorporates even-aged and uneven-aged management systems. The plan maintains a mix of stands by type and will provide noticable age class distribution within softwood types.	All
3. Encourage retention and conversion to Northern Hardwoods where possible to increase this forest type with respect to softwoods.	2,3,5,6 7,19,30, 36,38,39, 40,41,42
4. Encourage an increase in both temporary and permanent openings visible from the highway, providing for at least 5 percent of the area to be in opening at any one time.	10,11,17, 28
5. Identifies enhancement opportunities by promoting species that add color and texture diversity to the viewshed, such as Paper Birch and Tamarack.	13

6. Recognizes unique stands that should be managed under preservation concept.	4,14,32
7. Favors White Pine and Spruce over other softwoods.	13,21,23 26
8. Incorporates vegetative management to meet and enhance several recreation opportunities including:	
a. Driving for pleasure by maintaining visual variety and seasonal contrast.	All
b. Creating middle-ground views	3,5,13,19 42
c. Berry production as well as maintaining this opportunity over time.	14,24a,33
d. Firewood collecting	3,5,13,19 42
e. Wildlife viewing	11,13,17
f. Christmas tree collecting	10,16

g. Management of vegetation adjacent to trails to provide for safety of user as well as maintaining a desired character along the trail.

h. Enhances opportunity for photography and bird watching. All

i. Enhances penetrating views into the forest providing opportunity to collect forest products and maintaining peoples desire to walk through woods to their own private pool on the river.

j. Recognizes need to complete detailed plans that outline more specific vegetative management direction to meet the needs of the public at two major campgrounds and one picnic area. 1,8,22,23

XII. IMPLEMENTATION AND SCHEDULING

Ten Year Action Plan

Figure 9, Ten Year Action Plan, provides specific direction for implementing the Viewshed Plan. Treatments are indicated by one of four different activities:

1. Firewood Sale
2. Ranger Sale
3. Formal Timber Sale Program
4. Other Activities including pre-commercial thinning and mowing

The difference in choice of activity depends on the product resulting from the sale, volume and cost, restrictions on equipment, and ease of administration. Treatments are also based on those priorities developed under Viewshed Direction.

A summary of units to be treated by year are outlined in Table 6. For each year, specific prescriptions are to be developed to carry out the proposed action. Sample prescriptions for the first year (1985) are provided at the end of this chapter.

In addition to the silvicultural treatments, the Ten Year Action Plan calls for completion of more detailed vegetative management plans for Passaconaway and Jigger Johnson Camp Ground by September 30, 1985.

As project planning for individual treatment units moves closer to actual

implementation, various refinements may need to be made. Treatment units, for example will need to be mapped as they are actually laid out in the field. Changes in stand characteristics will require documentation. Technical changes, or other unforeseen changes may warrant redesign. Toward the end of the Ten Year period, similar prescriptions for the next decade should be developed.

Residue Treatment

In all activities, the following residue treatment will apply:

--Complete removal for first 50 feet

--Lop and scatter under 2 feet for next 100 feet

--No piles or limbs over 3 feet for remainder of area

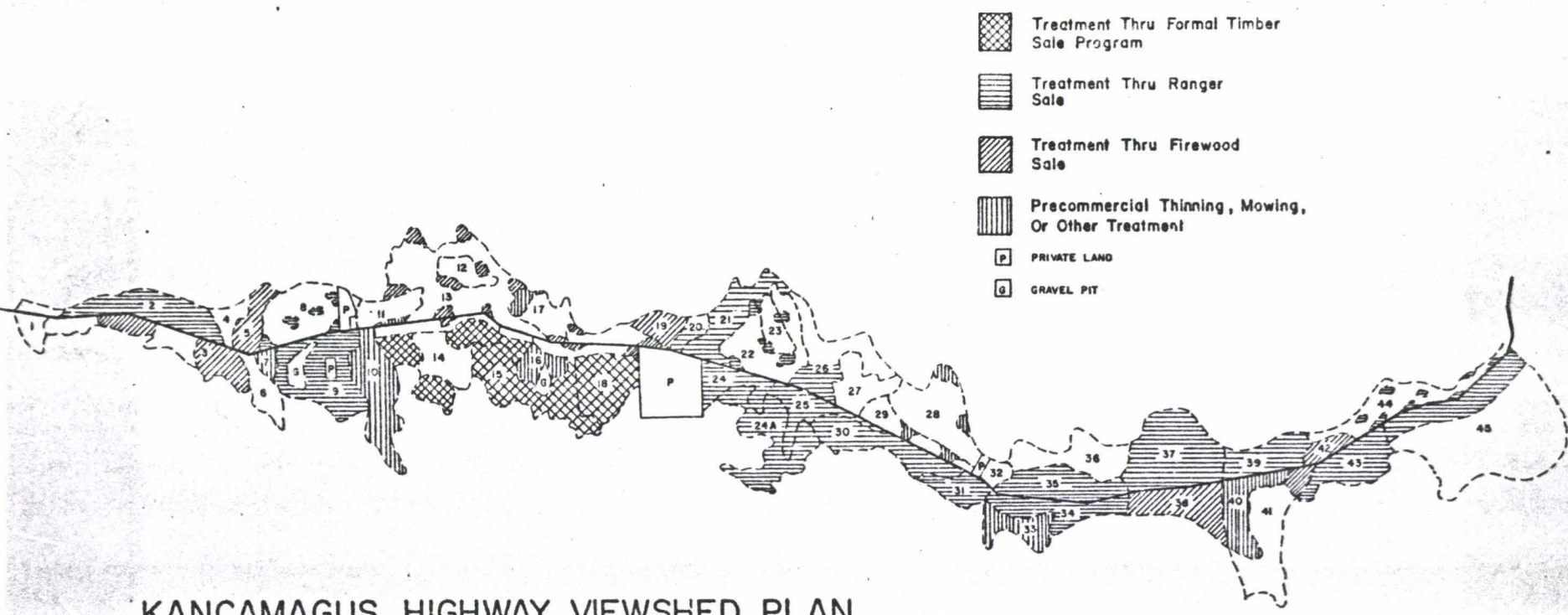

Treatment Thru Formal Timber Sale Program
Treatment Thru Ranger Sale
Treatment Thru Firewood Sale
Precommercial Thinning, Mowing, Or Other Treatment
P PRIVATE LAND
G GRAVEL PIT
KANCAMAGUS HIGHWAY VIEWSHED PLAN
TEN-YEAR ACTION PLAN

Fig. 9 - TEN YEAR ACTION PLAN

Table 6
TEN YEAR ACTION PLAN
SUMMARY OF UNITS TO BE TREATED BY YEAR

YEAR	UNITS TO BE TREATED
1985	3, 7, 8, 11, 12, 13, 17, 26, 28, 38
1986	5, 10, 14a, 22, 23, 28
1987	3, 35, 37, 29
1988	14c, 14b, 15, 16, 18, 20, 21, 44
1989	13, 24, 24a, 25, 42
1990	8, 9, 31, 33, 38, 40
1991	8, 10, 13, 19, 22, 23, 41
1992	30, 43, 44
1993	2, 13, 20, 21, 28, 39
1994	34, 35

Table 7 - TREATMENT PRESCRIPTIONS FOR 1985 SUMMARY

UNIT IDENTIFICATION	TYPE SALE	PRESCRIPTION	FUNDING METHOD	ADM. COST	PROPOSED FUNDING
3	Fuelwood	Thin from below	FA/3 MD	$350.	Sale Prep./Sale Adm.
7	Pre.Comm./ Thin	Spec. Instr.	FA/3 MD	$275.	P & M/ TSI
8	Ranger Sale	SW/Three Step	FA/7 MD	$750.	Rec. Adm./Sale Prep./ Sale Adm.
11,12,17,28	Mow Openings	Spec. Instr.	Contract	$3000.	Wildlife Maintainance/ Visual Enhancement
13	Firewood Sale	Spec. Instr.	FA/3 MD	$350.	Sale Prep./Sale Adm.
26	Ranger Sale	Spec. Instr.	FA/3 MD	$350.	Sale Prep./Sale Adm.
26	Understory Treatment	Spec. Instr.	FA/4 MD	$300.	Visual Enhancement
38	Firewood Sale	Thin Stand to 80 BA	FA/7 MD	$200.	Sale Prep./Sale Adm.

TEN YEAR ACTION PLAN
TREATMENT PRESCRIPTIONS FOR 1985

UNIT 3 -- In the portions of this unit adjacent to and either side of the Downes Brook Road, prepare two firewood sales of 10-15 cords each. While the desired future condition is to manage UFA, these initial entries should begin to develop patches or increments within the unit by even-aged treatment. In this case thin suppressed and intermediates to a B.A. of 70-80 sq. ft. Favor Sugar Maple, Yellow Birch, and Ash.

--By restricting the sales to animal or year long hand logging or small crawler tractor on frozen ground, there should be no need for landing construction. All disturbed soil to be revegetated the following spring by the purchaser. (Standard District Mixture)

-- Estimated area both sales: 8 acres. Estimated volume/value: 30 cords/$250. Sale method: 2400-4 Permit/Advertised.

UNIT 7 -- Due to Moose browsing over the past two years, this unit is not developing as planned. While the desired condition is to develop a hardwood stand, White Pine or Spruce will be considered acceptable in the absence of Sugar Maple, Birch, Ash, or Red Maple. Desired spacing is 12' x 12'. All seedings should be considered free to grow and will not need release. Red Maple stump sprouts will be reduced to one unbrowsed shoot originating within 4" of the ground. Where these two conditions are not possible release a White Pine or Spruce by cutting all material in a 3' circle around the selected stem.

-- This work will be programmed in October or November to be accomplished by regular crew using clippers.

UNIT 8 -- Develop special vegetative management plan by 9/28/84. Treat 20% of area per decade through modified application of Three Step Shelterwood to maintain healthy White Pine type. Apply treatment to 1/4 to 2 acre patches distributed throughout campground. Specific site conditions for certain patches within the immediate campground area may indicate need for additional planting for first year treatment.

UNITS 11, 12, 17, & 28 -- Mowing prescriptions.

-- While these areas show as openings, they are actually 10% ± stocked with trees and 10-20% stocked with Rank Spirea and associated Swamp Brush Viburnums, Sambucus, Cephalathus, etc. Mowing has been going on for the past four years but there is only one area of unit 11 (5 acres) that has been converted to non-woody vegetation. For this reason most areas will have to be mowed more frequently (every other year instead of the three year plan) until all woody growth is removed. Also a bush hog will be necessary as the initial regrowth will be too woody for a cyclebar mower.

-- In addition to removing the areas previously mowed, new areas should be mowed each year to enlarge the openings and move them toward the highway. In order to do this, some open grown Pine, Tamarack and Cherry will have to be cut and made to lay flat on the ground. These trees do not have commercial value.

-- Do not try to mow areas that are normally wet. Not only would these be too difficult to maintain by machine, but they provide needed wildlife habitat and help create the informal visual character of the openings.

UNIT 13 -- Pick three or four patches (1/2 - 2 acres) of Black Cherry. This time work adjacent to areas that will be mowed to simplify access.

-- In one area thin to a B.A. of 50 and mow between the residuals the following year. Include a provision to reduce stump heights to 6" highside.

-- Select another area with the same treatment but do not mow in future years.

-- Clearcut a third patch and mow the following year. Include a provision to reduce stump heights to 6" highside.

-- Clearcut the fourth patch but do not mow.

-- These units should be monitored annually.

-- Estimated acres: 5. Estimated value/volume: 50 cords $500. Method of sale: Single 2400-3 Contract/Advertised.

UNIT 26 -- Prepare a multiple product sale on the southern half of this unit from the junction of the Bear Notch Road and the Kancamagus Highway North to where the old Bear Notch Road enters. Leave tree mark this area reserving all of the dominant and co-dominant White Pine, Red Spruce and hardwoods. All other material is to be cut. All material meeting standard utilization specs will be cut and removed. All remaining material down to 2" will be cut by the purchaser and made to lay within 1' of the ground.

-- Restrict logging to frozen ground and allow decking roadside.

-- Standard 2400-3 contract clauses are sufficient but the sale should be negotiated to assure the maximum cooperation.

UNIT 26 -- Second Treatment.

-- Immediately following the sale the District crew shall go over the sale area and cut all remaining material that is over 5' tall. This should be a very quick job. The objective is to elimate anything that could not be conveniently sprayed with a small garden sprayer.

-- On August 15 following the sale and TSI treatment: Following the manufacturers lable instructions, prepare and apply Garlon 3A folia spray with small (2 gallon) garden type sprayer. Applications should be made early in the morning with no wind. A second treatment should not be necessary for three years.

UNIT 38 -- Prepare a 30 $\pm$ cord firewood sale between the Brooks adjacent to Champney Falls parking lot. This is a standard even-aged prescription for this unit e.g.: thin to 80 sq. ft. and all slash to lay within 2' of the ground. Favor the Sugar Maple, Yellow Birch, and Ash. Paper Birch is mature but retain if needed to maintain stocking level.

-- May be logged on frozen or dry ground with a crawler tractor. A temporary access point and small (less than 1/5 acre) landing will have to be made. Any slash in either stream must be removed immediately.

-- Estimated area: 7 acres. Estimated volume/value: 30 cord $300. Sale method: 2400-4 Permit/Advertised.

APPENDIX

APPENDIX A

MANAGEMENT AREA DIRECTION - MA 2.1

MANAGEMENT AREA DIRECTION

MANAGEMENT AREA 2.1

Purpose.

The goal within this management area is to:

- Protect and enhance visual quality
- Broaden the range of recreation options, mainly those offering roaded natural opportunities
- Provide moderate amounts of high quality hardwood and other timber products on a sustained yield basis
- Provide a balanced mix of habitats for all wildlife species

Desired Condition Of The Land.

The Forest will be a mosaic of stands of predominantly hardwood trees providing habitat for game and non-game species. The stands will vary in size, shape, height, and species. Two different conditions will occur among the stands: some stands will consist of trees of about the same age and size; other stands will consist of a mix of tree sizes and ages ranging from seedlings to very large mature trees. In either case, openings will be interspersed in stands with shapes and sizes which will be compatible with the rest of the landscape.

Along major road corridors, large diameter trees with a variety of bark and foliage characteristics will predominate. These trees will represent both shade tolerant and intolerant species. Numerous views of panoramic and ephemeral landscapes will be provided through moving and stationary vistas. Interpretation of views and natural processes will be provided at most stationary vista sites.

There will be considerable human activity in these areas resulting from many uses. Evidence of man will usually be in harmony with the natural-appearing environment and consistent with good resource management.

Roads will provide access for various land management activities. Selected areas will be accessible for off-road motorized forms of recreation activities. Some roads will be open to provide roaded motorized recreation opportunities such as firewood gathering and hunting access. Generally there will be 1 to 3 miles of road per square mile of area.

The tree stands will be small to moderate in size (generally 40 to 2,500 acres) and will usually occur in heavily used road and trail corridors.

Management Area 2.1 - Requirements

Elements	General Direction	Practices	Standards and Guidelines
Timber	A mix of uneven-aged and even-aged silvicultural systems will be used. Even-aged management will be prescribed for both tolerant light demanding species, and for visual enhancement and landscape diversity. Even-aged management will generally be practical on 45-55% of the area.	Harvest (Even-aged)	See Appendix C-3 for Vegetative Manipulation Standards and Guidelines for Management Area 2.1 Generally activity fuels within 50 feet of a permanent road, trail, or private property will be required for intensive treatment or removal. In an additional zone from 50-200 feet, activity fuel will be treated when necessary to meet visual quality objectives. Logging restrictions will be applied as needed to ensure protection of resource values. Scheduled harvests will meet minimum operability standards of 1000 board feet of sawlogs per acre or any combination of sawlogs and other products equaling a total of 7 cords per acre. Temporary openings resulting from final harvest cuts will be designed in accordance with Appendix C-6 (VQO Guide for Even-Aged Timber Management Practices on the White Mountain National Forest).
		Timber Stand Improvement (TSI) (Even-Aged)	Use of chemicals to include herbicides and pesticides will be allowed as per label specifications and proper mitigation procedures for resource protection. See Appendix C-3 for TSI specifications. Release will be accomplished for all timber types less than 15 years of age when a non-commercial overstory is over-topping the seedlings. Seedling stands will be 60% stocked with desirable species of good quality.

Management Area 2.1 - Requirements

Elements	General Direction	Practices	Standards and Guidelines
Timber (Cont.)		Reforestation (Even-Aged)	Artificial - See Appendix C-3 for site specific standards and guides. When artificial regeneration is used it should be accomplished within 2 years of the harvest cut. Only genetically approved stock will be used. Site preparation for planting may include manual, prescribed fire, chemical or mechanical methods as long as resource values are protected. Regeneration will be accomplished within 5 years. If natural regeneration is unsuccessful, artificial regeneration will be used.
	Uneven-aged management will be considered on a site-by-site basis and will generally be applied on 45-55% of the management area when the following criteria apply: (1). Where a continual "big tree image" or maintenance of the late successional (climax) condition is desired for aesthetic purposes. (2). When winter cover (spruce-fir and hemlock type) for deer is of primary consideration. (3). When a fragile site would be adversely affected by the complete removal of cover for even short periods of time; to include steep slopes, high water tables, or dry sites. (4). When it is desirable to maintain vertical closure of the stand to provide shelter from wind for a facility, or to prevent wind-throw of adjacent trees. (5). When uneven-aged management is silviculturally most appropriate.	Harvest (Uneven-Aged)	See Appendix C-5 for applicable uneven-aged management standards and guidelines. See Appendix C10 for stand selection criteria for uneven-aged management. Selection cuts will generally be made on a 15-year entry interval, however entry may vary from 10 to 25 years on individual site conditions. Cull tree removal will be completed in conjunction with timber sales, and followed by another treatment within 5 years of the selection cut. Logging restrictions will be applied as needed to ensure protection of resource values. Scheduled harvests will meet minimum operability standards of 1000 board feet per acre of sawlogs or any combination of sawlogs and other products equaling a total of 7 cords per acre.

Elements	General Direction	Practices	Standards and Guidelines
Timber (Cont.)			Generally, activity fuels within 50 feet of a permanent road, trail, or private property will be required for intensive treatment or removal. In an additional zone from 50-200 feet, activity fuels will be treated when necessary to meet visual quality objectives.
		Timber Stand Improvement (TSI) (Uneven-Aged)	Use of chemicals will be allowed as per label specifications and proper mitigation procedures for resource protection. See Appendix C-5 for TSI specifications.
		Reforestation (Uneven-Aged)	Regeneration will be accomplished within 5 years. If natural regeneration is unsuccessful, artificial regeneration will be used.

Management Area 2.1 - Requirements

Elements	General Direction	Practices	Standards and Guidelines
Wildlife	Wildlife habitat diversity will be created and maintained for both game and non-game species through timber cutting and habitat improvements such as openings and impoundments.	Opening Maintenance	Mechanical, chemical, prescribed fire, or manual methods of opening maintenance will be used to ensure protection of resource values. See Appendix C-4 for site specific standards and guides.
Roads	Road design and construction standards will be determined by needs of all resources. Roads closed to public travel will be maintained to protect the investment and the adjacent resources. Roads open to public vehicular travel will be maintained at a level to provide for user convenience and safety.		
Recreation	"Roaded Natural" recreation experience opportunities will generally be the dominant ROS objective. Facilities and trails will be designed, constructed, operated, and maintained with the indicated ROS class.	Recreation related to Specific Facilities and Sites (previously "developed") Construction/Reconstruction	Handicapped facilities and group sites will be provided. Developed sites may be constructed to facility development levels 2-4. Motorized access and use will predominate.
		Administration, Operation, and Maintenance	Region 9 publication, "Full Service/Reduced Service Standards," will be followed. Tables, toilets, fireplaces, care and policing will be generally done at a level to maintain an attractive setting and user comfort and safety. White Mountain National Forest "Recreation Management Standards of Performance" will also be applicable. Appendix H describes standards by various funding levels.
		Interpretive Signing	At roadside areas designed as vistas, with parking opportunities, interpretive signing will be provided.

Management Area 2.1 - Requirements

Elements	General Direction	Practices	Standards and Guidelines
Recreation (Cont.)		Use Administration (other than facilities and sites) (previously dispersed)	Motorized and non-motorized activities will be acceptable. Roads within this management area will be scheduled for public access when necessary to meet a resource management need.
		Trail Construction/Reconstruction	Foot trails will generally follow White Mountain National Forest Class III construction standards to meet the objective of roaded natural experience opportunities (Appendix I). Cross country ski trails - see Forest-wide management requirements for construction standards reference. Snowmobile trails - see Forest-wide management requirements for construction standards reference.
		Trail System Maintenance and Operation	Trails White Mountain National Forest maintenance level III will be the general aim on foot trails (Appendix J). There may be some maintenance level IV trails to meet the needs of family or senior citizen use. Loop trails will be emphasized. Snowmobile trails - Grooming will be allowed.
Visual	The visual resource will receive special considerations in the planning and application of projects in this management area.		Guidelines and principles outlined in the National Forest Landscape Management Handbooks will be used. (Appendix M).

APPENDIX B

Visual Quality Objective Guide/Even-aged Management

Foreground Zone

CUTTING METHODS	VQO	GUIDELINES			
A) Clearcutting and Two-Cut Shelterwood	Retention	Stationary Observation	- Maximum of 1 acre of observed opening in shade intolerant species only.	Vehicle Oriented Observation	- Maximum of 1 to 3 acres of observed opening if strong relationship with existing vegetative patterns and land form can be achieved.
	Partial Retention	Stationary Observation	- Maximum of 1 to 3 acres of observed opening if strong relationship with existing vegetative patterns and land form can be achieved.	Vehicle Oriented Observation	- Up to 5 acres observed opening with strong relationship to existing vegetative patterns and land forms.
	Modification	Stationary Observation	- Up to 5 acres observed opening with strong relationship to existing vegetative patterns and land forms.	Vehicle Oriented Observation	- Up to 10 acres observed opening with strong relationship to existing vegetative patterns and land forms.
	All	- No geometric shapes or spacing patterns. - Visible edges feathered. - Openings oriented to contours. - Adjacent cutting should reflect achievement of desired VQO. - Consideration for extended rotation, seasonal restrictions, special residue management, special road and landing design, and logging equipment restrictions should apply.			
B) Preparation-Cut Shelterwood	All	- For final removal, guidelines for clearcutting and two-cut shelterwood should apply. Acreage of openings may be increased due to established new growth and reduction of contrast. - Consideration for extended rotation, seasonal restrictions, special residue management, special road and landing design, and logging equipment restrictions should apply.			
C) Intermediate Cut	All	- For final removal, guidelines for clearcutting and two-cut shelterwood should apply. - Consideration for extended rotation, seasonal restrictions, special residue management, special road and landing design, and logging equipment restrictions should apply.			

Visual Quality Objective Guide/Even-aged Management

Middleground Zone

CUTTING METHODS	VQO	GUIDELINES			
A) Clearcutting and Two-Cut Shelterwood	Retention	Stationary Observation	- 1 to 3 acre patch cuts of observed opening with strong relationship to existing vegetative patterns and land forms.	Vehicle Oriented Observation	- Up to 5 acres observed opening with strong relationship to existing vegetative patterns and land forms. Consider special road and landing design.
	Partial Retention	Stationary Observation	- Up to 10 acres of observed opening with strong relationship to existing vegetative patterns and land forms. Consider special road and landing design.	Vehicle Oriented Observation	- Up to 15 acres observed opening with strong relationship to existing vegetative patterns and land forms. Consider special road and landing design.
	Modification	Stationary Observation	- Up to 15 acres of observed opening with good relationship to existing vegetative patterns and land forms.	Vehicle Oriented Observation	- Up to 20 acres of observed opening with good relationship to existing vegetative patterns and land forms.
	All	- No geometric shapes or spacing patterns. - In near Middleground, consider feathering visible edges. - Openings oriented to contours. - Adjacent cutting should reflect achievement of desired VQO.			
B) Preparation-Cut Shelterwood	All	- For final removal, guidelines for clearcutting and two-cut shelterwood should apply. Acreage of openings may be increased due to established new growth and reduction of contrast.			
C) Intermediate Cut	All	- For final removal, guidelines for clearcutting and two-cut shelterwood should apply.			

Visual Quality Objective Guide/Even-aged Management

Background Zone

CUTTING METHODS	VQO	GUIDELINES			
A) Clearcutting and Two-Cut Shelterwood	Retention	Stationary Observation	- Up to 5 acres of observed opening with good relationship to existing vegetative patterns and land forms.	Vehicle Oriented Observation	- Up to 10 acres of observed opening with good relationship to existing vegetative patterns and land forms.
	Partial Retention	Stationary Observation	- Up to 15 acres of observed opening with good relationship to existing vegetative patterns and land forms.	Vehicle Oriented Observation	- Up to 25 acres observed opening with good relationship to existing vegetative patterns and land forms.
	Modification	Stationary Observation	- Up to 25 acres observed opening with good relationship to existing vegetative patterns and land forms.	Vehicle Oriented Observation	- Up to 40 acres observed opening with good relationship to existing vegetative patterns and land forms.
	All	- No geometric shapes or spacing patterns. - Openings oriented to contours. - Adjacent cutting should reflect achievement of desired VQO.			
B) Preparation-Cut Shelterwood	All	- For final removal, guidelines for clearcutting and two-cut shelterwood should apply. Acreage of openings may be increased due to established new growth and reduction of contrast.			
C) Intermediate Cut	All	- For final removal, guidelines for clearcutting and two-cut shelterwood should apply.			

APPENDIX C

Even-aged Vegetative Manipulation Standards and Guidelines for Management Area 2.1

APPENDIX C3

SPECIES	HARVEST METHOD/ ROTATION AGE	SITE CLASS	INTERMEDIATE CUTS: THIN INTERVAL / STOCKING LEVELS	INTERMEDIATE CUTS: THINNING PERIOD(YRS) / MAXIMUM NO. OF THINS	TIMBER STAND IMPROVEMENT: PRE-COMMERCIAL THIN	TIMBER STAND IMPROVEMENT: WEEDING	REFORESTATION: ARTIFICIAL	REFORESTATION: NATURAL	OTHER
Northern Hardwood (High Intensity)	Clearcutting, shelterwood, or strip cutting as per site specific directions in A Silvicultural Guide for Northern Hardwood in the Northeast (NE-143) and Habitat Mapping and Interpretation in New England (NE-496) and Appendix C7. Rotation Age: 120 years unless one half or more of the trees are "mature" by DBH, by species, and by site (see Appendix C8). Final harvest no more than 8% per decade.	55+	20 years	50-110 / 3	To be done between 15 and 30 years on sites of 60 and better. Stands should have an acceptable number of stems of growing stock per acre as required to meet at least B level stocking when the stand reaches 5.0 inches (see appropriate table in silvicultural guide). Favor yellow birch, paper birch, sugar maple, white ash. Release 100 trees per acre.	To be done between 7 and 10 years of age on sites of 60 or better where stocking survey indicates an undesirable mix of species. Release 250 stems/acre on a 14X14 foot space.	None	On all sites, residual removal will occur within 5 years down to 2-inch DBH class. On sites greater than 55, mechanical scarification will be considered on a site-by-site basis.	Retain 10% of timber type to 175 years for Wildlife. All timber activities should ensure at least seven snags/acre retained for wildlife.
		<55	20 years. Thin every 20 years in accordance with NH guide if total stocking is halfway between the A and B line of the stocking guide. Thin to the B level plus 10 square feet.	50-110 / 1					
Northern Hardwood (Low Intensity)	Same as high intensity Northern Hardwood	All sites	Thin in accordance with NH guide if total stocking is halfway between the A and B line of the stocking guide. Thin to the B level plus 10 square feet.	60-110 / 1	Same as high intensity Northern Hardwood.	None	None	On all sites, residual removal will occur within 5 years down to 2-inch DBH class.	Retain 10% of timber type to 175 years for wildlife. All timber activities should ensure at least five snags/acre retained for wildlife.

Even-aged Vegetative Manipulation Standards and Guidelines for Management Area 2.1

SPECIES	HARVEST METHOD/ ROTATION AGE	SITE CLASS	INTERMEDIATE CUTS THIN INTERVAL STOCKING LEVELS	THINNING PERIOD(YRS) MAXIMUM NO. OF THINS	TIMBER STAND IMPROVEMENT PRE-COMMERCIAL THIN	WEEDING	REFORESTATION ARTIFICIAL	REFORESTATION NATURAL	OTHER
Northern Hardwood/ Spruce (High Intensity)	Same as Northern Hardwood	55+	20 years	60-100 / 2	To be done between 15 and 30 years on sites of 60 and better. Stands should have an acceptable number of stems of growing stock per acre as required to meet at least B level stocking when the stand reaches 5.0 inches (see appropriate table in silvicultural guide). Favor yellow birch, sugar maple, white ash, and spruce. Release 100 trees per acre. Ensure at least 25-49% stocking of desirable spruce.	To be done between 7 and 10 years of age on sites of 60 and better where stocking survey indicates an undesireable mix of species. Release 250 stems/acre on a 14X14 foot spacing. Ensure at least a 25-49% stocking of desirable spruce seedlings and saplings.	Allowed on a site-by-site basis on sites greater than 55.	On all sites, residual removal will occur within 5 years down to the 2-inch DBH class.	Retain 10% of timber type to 150 years for wildlife. All timber activities should ensure at least seven snags/acre retained for wildlife.
	Rotation Age: 110 years or unless one half or more of the trees are "mature" by DBH, by species, and by site (see Appendix C8). Final harvest no more than 9% per decade.	<55	20 years Same as Northern Hardwood.	60-100 / 1					
Northern Hardwood /Spruce (Low Intensity)	Same as High Intensity, Northern Hardwood/ Spruce.	All sites	Same as Northern Hardwood.	60-100 / 1	Same as Northern Hardwood/Spruce High Intensity.	None	None	Same as Northern Hardwood Low Intensity.	Same wildlife standards as high intensity Northern Hardwood/ Spruce.

Even-aged Vegetative Manipulation Standards and Guidelines for Management Area 2.1

SPECIES	HARVEST METHOD/ ROTATION AGE	SITE CLASS	INTERMEDIATE CUTS: THIN INTERVAL STOCKING LEVELS	INTERMEDIATE CUTS: THINNING PERIOD(YRS) MAXIMUM NO. OF THINS	TIMBER STAND IMPROVEMENT: PRE-COMMERCIAL THIN	TIMBER STAND IMPROVEMENT: WEEDING	REFORESTATION: ARTIFICIAL	REFORESTATION: NATURAL	OTHER
Paper Birch (High Intensity)	Clearcutting, seedtree and strip cutting as per site specific directions in A Silvicultural Guide for Paper Birch in the Northeast (NE-130) and Habitat Mapping and Interpretation in New England (NE-496) and Appendix C7. Rotation Age: 80 years unless one half or more of the trees are "mature" by DBH, by species, and by site (see Appendix C8). Final harvest no more than 13% per decade.	All sites	20 years Thin every 20 years in accordance with PB guide if total stocking is halfway between the A and B line of the stocking guide. Thin to the B level plus 10 square feet.	40-70 2	To be done between 15 and 30 years on sites of 60 or better. Stands should have an acceptable number of stems of growing stock per acre as required to meet at least B level stocking when the stand reaches 5.0 inches (see appropriate table in silvicultural guide). Favor paper birch, yellow birch, sugar maple and white ash. Release 100 trees per acre.	Same as Northern Hardwood High INtensity.	None	On all sites, residual removal will occur with 5 years down to the 2-inch DBH class.	No logging from March 1-June 30 for minimum disturbance of wildlife during breeding activity. Retain 10% of timber type to 120 years. All timber activities should ensure at least ten snags/acre retained for wildlife.
Paper Birch (Low Intensity)	Same as High Intensity paper birch.	All sites	Thin in accordance with PB guide if total stocking is halfway between the A and B line of the stocking guide. Thin to B level.	40-70 1	None	None	None	Same as High Intensity paper birch.	Same wildlife standards as High Intensity paper birch.

Even-aged Vegetative Manipulation Standards and Guidelines for Management Area 2.1

SPECIES	HARVEST METHOD/ ROTATION AGE	SITE CLASS	INTERMEDIATE CUTS: THIN INTERVAL / STOCKING LEVELS	INTERMEDIATE CUTS: THINNING PERIOD(YRS) / MAXIMUM NO. OF THINS	TIMBER STAND IMPROVEMENT: PRE-COMMERCIAL THIN	TIMBER STAND IMPROVEMENT: WEEDING	REFORESTATION: ARTIFICIAL	REFORESTATION: NATURAL	OTHER
Spruce/ Fir (High Intensity)	Clearcutting, shelterwood, and strip cutting as per site specific directions in A Silvicultural Guide for Spruce Fir in the Northeast (NE-6) and Habitat Mapping and Interpretation in New England (NE 496) and Appendix C7. Rotation Age: 90 years unless one half or more of the trees are "mature" by DBH, by species, and by site (see Appendix C8). Final harvest no more than 11% per decade.	45+ < 45	20 20 Thin every 20 years in accordance with Spruce Fir Guide if total stocking is halfway between the A and B line of the stocking guide. Removal should not exceed 40% of total basal area.	50-80 / 2 50-80 / 1	May be considered on a case-by-case basis.	To be done between 7 and 15 years of age on sites of 45 and better where stocking survey indicates an undesirable mix of species. Release at least 250 stems per acre on a 14X14 foot spacing.	Allowed on a site-by-site basis on sites of 45 +.	On all sites residual removal will occur within 5 years down to the 2 inch DBH class.	Retain 10% of timber type to 150 years for wildlife. All timber activities should ensure at least seven snags/acre retained for wildlife. No logging from March 1 - June 30 for minimum disturbance of wildlife during breeding activity.
Spruce/ Fir (Low Intensity)	Same as High Intensity Spruce/Fir.	All sites	Thin in accordance with Spruce/Fir Guide if total stocking level is half way between the A and B line of the stocking guide. Removal should not exceed 40% of the total basal area.	50-80 / 1	None	None	None	Same as High Intensity Spruce Fir.	Same Wildlife standards as High Intensity Spruce/Fir.

APPENDIX D

Uneven-aged Vegetative Manipulation Standards and Guidelines for Management Area 2.1

SPECIES	HARVEST METHOD	SITE CLASS	SELECTION CUTS STAND STRUCTURE GUIDES	TIMBER STAND IMPROVEMENT PRE-COMMERCIAL THIN	TIMBER STAND IMPROVEMENT WEEDING	REFORESTATION	OTHER
Northern Hardwood and Northern Hardwood/ Spruce	Group selection and single tree selection allowed depending on site specific objectives. Source silvicultural guides are Uneven-aged Management of Northern Hardwoods in New England (NE-332) and A Silvicultural Guide for Northern Hardwoods in the Northeast (NE-143) and Habitat Mapping and Interpretation in New England (NE-496) and Appendix C7 and WMNF Uneven-aged Silvicultural Guide.	55+	Residual basal areas of 70 to 80 square feet in Northern Hardwood will be achieved with an eventual maximum tree diameter of 20-24 inches with a Q factor goal of 1.3. Residual basal areas of 80-90 square feet in Northern Hardwood/Spruce will be achieved with an eventual maximum tree diameter of 20-24 inches with a Q factor goal of 1.3.	To be done between 15 and 30 years on sites of 60 and better. Stands should have an acceptable number of stems of growing stock per acre as required to meet at least B level stocking when the stand reaches 5.0 inches (see appropriate table in silvicultural guide). Favor yellow birch, paper birch, sugar maple, white ash. Release 100 trees/acre. This applies to group and patch selection only.	To be done between 7 and 10 years of age on sites of 60 and better where stocking survey indicates an undesirable mix of species. Release 250 stems/acre on a 14 X 14 foot spacing. This applies to group and patch selection only.	On all sites residual removal will occur within 5 years down to the 2-inch DBH class. This applies to group and patch selection only.	Retain 5% of trees/acre as old growth to 175 years with 50% of old growth in Northern Hardwood/Spruce type to be softwood. In Northern Hardwood/Spru. stands within 1/8 mile of wintering deer yards, cutting activities will be limited to winter only. All timber activities should ensure at least 5 snags/acre retained for wildlife.
	Same as above except a maximum tree diameter of 16-20 inches with a Q factor goal of 1.7.	<55					

Uneven-aged Vegetative Manipulation Standards and Guidelines for Management Area 2.1

SPECIES	HARVEST METHOD	SITE CLASS	SELECTION CUTS STAND STRUCTURE GUIDES	TIMBER STAND IMPROVEMENT PRE-COMMERCIAL THIN	WEEDING	REFORESTATION	OTHER
Spruce/ Fir	Group selection and single tree selection allowed depending on site specific objectives. Source silvicultural guides are A Silvicultural Guide for Spruce-Fir in the Northeast (NE-6) and Habitat Mapping and Interpretation in New England (NE-496) and Appendix C7 and WMNF Uneven-aged Silvicultural Guide.	45+	Residual basal areas of 90 to 120 square feet with an eventual maximum tree diameter of 20-24 inches with a Q factor goal of 1.3.	None	None	Same as above	Retain 10% of trees/acre as old growth to 100 years for fir and 150 years for spruce. No cutting activity from March 1 thru June 30 for wildlife breeding. All timber activities should ensure at least 5 snags/acre retained for wildlife. Maximum opening size of 5 acres
		<45	Same as above except an eventual maximum tree diameter of 16-20 inches with a Q factor goal of 1.7.				

UNIT 2 | COMPARTMENT 99 STAND 2

TYPE: Northern Hardwood SIZE CLASS: Sawtimber ACRES: 24

FOREST CHARACTERISTICS: Fully stocked stand of Northern Hardwood (B.A. 80). Was thinned from below in 1982. Stand contains many large old growth Sugar and Red Maple. Opportunity to manage for large tree image with mix of tree sizes. Highly productive site on outwash.

SPECIAL VISUAL CHARACTERISTICS: Stand is one of the few along the highway that offers an image of healthy large diameter hardwoods. Stand fronts highway for approximately ½ mile. Quite open providing good penetration into forest.

SPECIAL RECREATION CHARACTERISTICS:

MANAGEMENT DIRECTION: Feature large diameter (24") Northern Hardwood. Manage under uneven-aged/single tree selection using a low Q Factor (1.3). Favor Sugar Maple and Ash.

IMPLEMENTATION SCHEDULE: Plan entry toward end of this period or at beginning of next.

APPENDIX F

DEFINITIONS

Developed Recreation Area - A relatively small, distinctly defined portion of the National Forest where concentrated public use occurs and facilities are provided for such uses, i.e., campgrounds, picnic areas, swimming areas, and alpine ski areas.

Dispersed Recreation - Recreational use outside of developed recreation areas. Includes such activities as hiking, backpacking, hunting, fishing, snowmobiling, cross-country skiing, and driving for pleasure.

Distance Zones -

Foreground - The detailed landscape found within 0 to 1/2 mile from the observer.

Middleground - The space between the foregound and the background in a landscape. The area from 1/4 - 1/2 to 3 - 5 miles from the viewer.

Background - The distant part of a landscape located from 3 to 5 miles to infinity from the viewer.

Even-Aged Management - A timber management system that results in the creation of stands in which trees of essentially the same age grow together. Cutting methods producing even-aged stands are clearcut, shelterwood, or seed tree.

Clearcutting - The removal in a single cut of the entire standing crop of trees. It prepares the area for rapid seed germination and growth of a new even-aged stand.

Shelterwood Cutting - A method designed to establish a new crop under a remaining portion of the old stand which provides both a seed source and protection of the site and seedlings.

Seed Tree Cutting - The removal in one cut of the mature timber from an area with a small number of seed bearing trees retained for regeneration.

Habitat Management Unit (HMU) - A unit of land approximately 4,000 acres in size, the boundaries of which fall on compartment boundaries, and which contains a mix of habitat types. At least one of these types must be a pond or stream with wetland potential.

Habitat Type - A small unit of land from a few to over 100 acres lying within a given climatic mineralogical zone and supporting a distinct successional sequence of vegetation growing on a unique type of soil

material.

Recreation Opportunity Spectrum (ROS) - A means of expressing a range of recreation experience opportunities. Each part of the spectrum represents a particular kind of experience opportunities. They are:

Primitive- Recreation opportunities characterized by natural appearing environment and high probability of isolation from others. Offers high degree of challenge and risk.

Semi-Primitive - Recreation opportunities characterized by predominantly natural appearing environment and low degree of interactions between users. Evidence of other users is present. Managed to minimize on-site controls and restrictions. There are non-motorized and motorized categories.

Roaded Natural - Recreation opportunities characterized by predominantly natural appearing environment but with moderate evidence of man. Resource utilization practices are evident.

Rural - Recreation opportunities characterized by substantially modified environment. Sights and sounds of humans readily evident. Facilities designed for use by a large number of people.

Recreation Visitor Day (RVD) - One visitor day equals 12 hours (one person for 12 hours, or 12 people for 1 hour, or any combination thereof).

Uneven-aged Management - A timber management system that simultaneously maintains continuous high forest cover and recurring regeneration of desirable species. Trees of several sizes and ages are found within the same stand. Methods that develop and maintain uneven-aged stands are single-tree selection, group selection, and patch cutting.

Single Tree Selection - A system where individual trees are selected and cut in a stand while maintaining a prescribed number of trees in each diameter class ("Q" Factor).

Group Selection - A modification of the single tree selection system where trees are removed in small groups at a time (usually less than 1 acre).

Patch Cutting - A modification of the single tree selection system where all trees in a small delineated area (up to 2 acres) are removed while still maintaining the prescribed diameter class distribution in the stand as a whole.

Visual Quality Objectives (VQO) - A desired level of scenic quality. Refers to an acceptable degree of alteration of the characteristic

landscape:

Preservation - A visual quality objective that provides for ecological change only.

Retention - A visual quality objective which means that a person's activities are not evident to the casual Forest visitor.

Partial Retention - A visual quality objective which means that a person's activities may be evident but must remain subordinate to the characteristic landscape.

Modification - A visual quality objective which means that a person's activities may dominate the characteristic landscape but must, at the same time, utilize naturally established form, line, color, and texture.

Visual Resource - The composite of basic terrain, geologic and hydrologic features, vegetative patterns, and land use effects that typify a land unit and influence the visual appeal of the visitor.

APPENDIX G

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